CURTIS'S
BOTANICAL MAGAZINE,

COMPRISING THE

Plants of the Royal Gardens of Kew,

AND

OF OTHER BOTANICAL ESTABLISHMENTS IN GREAT BRITAIN;

WITH SUITABLE DESCRIPTIONS;

BY

SIR JOSEPH DALTON HOOKER, M.D., C.B., G.C.S.I.,
F.R.S., F.L.S., ETC.,
D.C.L. OXON., LL.D. CANTAB., CORRESPONDENT OF THE INSTITUTE OF FRANCE.

VOL. LIV.
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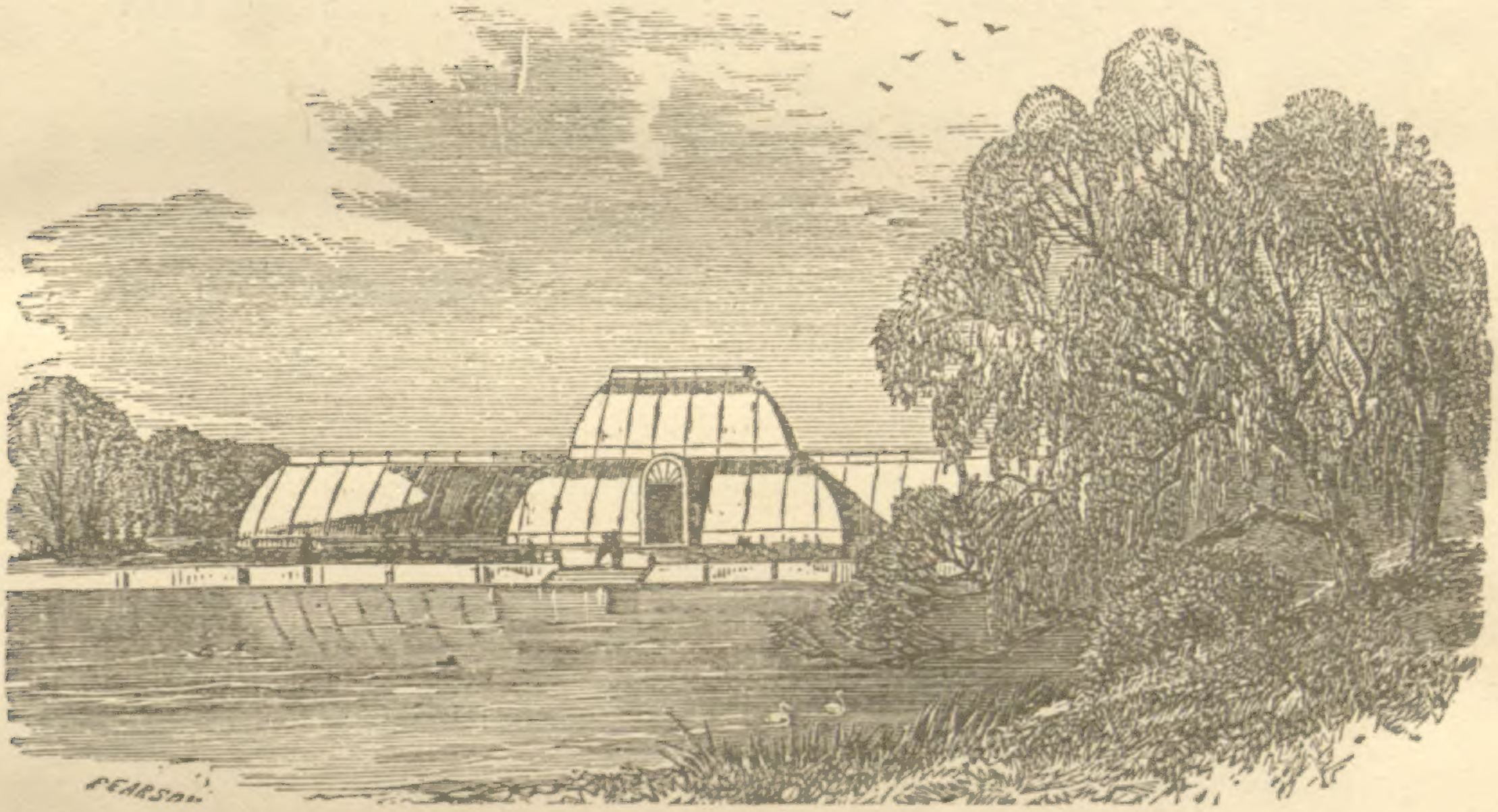

"The genuine life
That serves the steadfast hours,
Is in the grass beneath, that grows
Unheeded, and the mute repose
Of sweetly-breathing flowers."

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TO

WILLIAM BOTTING HEMSLEY, F.R.S., F.L.S.,

Principal Assistant, Herbarium, Royal Gardens, Kew.

My dear Hemsley,

I have three reasons, each sufficient, for offering to you the dedication of a volume of the Botanical Magazine; firstly, as a record of the interest you have shown in this work, and an acknowledgment of the valuable aid I have received from you in conducting it; secondly, the amount and importance of your labours in Systematic and Geographical Botany, as especially evidenced by your great works on the Flora of Central America, and on the Botany of the *Challenger* Expedition; and lastly, my wish that you should accept this dedication as the tribute of a friend to a collaborator for upwards of thirty years in the Herbarium of the Royal Gardens.

Believe me, with esteem and regard,

Faithfully yours,

J. D. HOOKER.

The Camp, Sunningdale.
Dec. 1*st*, 1898.

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Late Director of the Royal Botanic Gardens of Kew.

Nature and Art to adorn the page combine,
And flowers exotic grace our northern clime.

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Tab. 7572.

CAMOENSIA maxima.

Native of Western Africa.

Nat. Ord. Leguminosæ.—Tribe Sophoreæ.

Genus Camoensia, *Welw.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 557.)

Camoensia *maxima*; frutex alte scandens, ramis pendulis, ramulis petiolis et inflorescentia rufo-fusco lanatis, foliis digitatim 3-foliolatis, foliolis elliptico-v. obovato-oblongis acuminatis breviter petiolulatis glabris, petiolo gracili, stipulis conicis rigidis nunc evanidis, floribus maximis, in racemos multifloros pendulos breves axillares dispositis crasse pedicellatis, bracteis bracteolisque parvis deciduis, calyce elongato anguste campanulato breviter 2-labiato crasse coriaceo, labio superiore 2-fido inferiore 3-partito, petalis unguiculatis flabellatim multi-costatis lacteis marginibus crispatulis aureis, vexillo suborbiculato 3–4-poll. lato in unguem costatum angustato, ceteris multo minoribus angustioribusque, staminibus petalis brevioribus, filamentis conniventibus glaberrimis, ovario lineari stipitato rufo-lanato, stylo elongato, stigmate capitellato, legumine lato lineari rufo-lanato oligospermo.

C. maxima, *Welw. ex Benth. in Trans. Linn. Soc.* vol. xxv. (1866), 301, t. 36. *Monteiro, Angola and the River Congo*, vol. i. p. 176, t. vi. *Ancona, in Bull. Soc. Tosc. Hortic.* 1886, p. 201, t. 9. *Pearing in Deutsch. Gart. Zeit.* 1886, p. 453, fig. 99. *Maury, Le Jardin*, 1887, p. 199, fig. 89. *Kew Bullet.* 1894, p. 402. *Gard. Chron.* 1895, vol. i. p. 44; 1896, vol. ii. p. 596, figs. 105, 106. *Baker in Oliv. Fl. Trop. Afric.* vol. ii. p. 252.

Giganthemum scandens, *Welw. Apont.* p. 585. *Hiern, Cat. Afr. Pl. Welwitsch, Dicot.* Pars. I. p. 285.

This superb climber, though familiar to Botanists, chiefly through Dr. Welwitsch's indefatigable labours, was discovered as early as 1816, by Christian Smith,* the lamented Botanist attached to the unfortunate expedition of Captain Tuckey to the Congo River, whose specimens of it are preserved to the British Museum. Dr. Welwitsch says of it, "Common in the dense forests of Golungo Alto, adorning the loftiest trees of the outskirts with its splendid bunches of milk-white flowers, tinged with gold on the

---

* I am indebted for this fact to Mr. Rendle, of the British Museum, to whom I wrote respecting the statement by Bentham in the Linnæan Transactions, that specimens of *Camoensia maxima*, collected by Afzelius, were in that Institution. Mr. Rendle informs me that this is an error, and that the name of Christian Smith should be substituted for that of Afzelius, who collected in a part of Africa (Sierra Leone) very far from the Congo region.

edges of the petals." There are specimens in the Kew Herbarium from the forest region of West Africa, which extends from the Congo at Stanley Pool, lat. about 4° S., to where Welwitsch found it in lat. 9° S. Monteiro, who saw it on the sides of hills at Quiballa, in lat. 7′ 40° S., describes it as appearing as soon as he left the gneiss formation, and entered that of mica slate, where the stout roots spread far in the hard clay of the decomposed rock, and shoot out into other plants.

The name *Camoensia* was given by Dr. Welwitsch as a tribute to the memory of the illustrious Portuguese poet, Louis Camoens, author of the "Lusiade," in which is introduced the voyage of discovery of Vasco di Gama, whom Camoens had in his youth accompanied as a soldier. He had previously, in his "Apontamente," imperfectly characterized it as *Giganthemum scandens*, referring it to *Robiniaceæ* (presumably tribe *Galegeæ* of *Leguminosæ*). The name was suppressed, at his own request, and replaced by *Camoensia*). The genus consists of two species, *C. maxima* and *C. brevicalyx*, Benth. The second species was discovered on the Muni River, in lat. 1° N. by G. Mann. Bentham says of the genus, "It stands alone in *Leguminosæ*, as combining the lofty climbing woody stems and habits of many *Dalbergieæ*, with the digitately trifoliolate leaves of *Podalyrieæ* and *Genisteæ*, while the flowers place it amongst *Sophoreæ*."

Seeds of *Camoensia maxima* were sent to Kew by M. Monteiro in 1873; these germinated freely, and young plants were largely distributed. The first to flower (in 1882) was one sent to the Botanical Gardens of Trinidad; the next (1894) was in that of Ceylon, and in September of the same year a third flowered with Mrs. Ruddle of Mythe Castle, Tewksbury. A specimen in the Royal Botanic Gardens of Edinburgh bore in 1897 racemes of 16 to 18 flowers. Our drawing was taken from a plant that flowered in the Royal Gardens, Kew, in November, 1896.

Descr.—A gigantic, woody climber, with pendulous flowering branches; young shoots, petioles, and inflorescence clothed with a scurfy brown deciduous tomentum. *Leaves* digitately trifoliolate; petiole slender, three to six inches long; leaflets about as long as the petiole,

subsessile, elliptic or obovate-oblong, acuminate, contracted to the obtuse base, thinly coriaceous, penninerved; stipules conical, recurved, rigid, or 0; stipellæ subulate. *Flowers* in short axillary racemes, shortly, stoutly pedicelled, sweet-scented; bracts and bracteoles small, linear-lanceolate, acuminate, fugaceous. *Calyx-tube* five to seven inches long, very narrow, coriaceous, dilating upwards; limb short, 2-lipped, upper lip 2-fid, lower spreading, 3-partite, segments imbricate, green within. *Petals* very large, milk-white, flabellately closely and stoutly veined or ribbed, narrowed into short, stout ribbed claws, margined with a crisped band of golden papillæ; standard nearly orbicular, three to four inches broad; wing and keel petals shorter and narrower. *Stamens* shorter than the petals; filaments stout, glabrous; anthers linear-oblong. *Ovary* rufously woolly; style longer than the stamens; stigma capitate. *Legume* six to eight inches long, broadly linear, valves tomentose, margins hardly thickened. *Seeds* few. —*J. D. H.*

Fig. 1, Flowers with calyx and petals removed, of the *nat. size*; 2, section of staminal tube and ovary; 3 and 4, anthers:—*All enlarged.*

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M.S. del. J.N. Fitch lith.

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Tab. 7573.

PAPHIOPEDILUM Victoria-Mariæ.

Native of Sumatra.

Nat. Ord. Orchideæ.—Tribe Cypripedieæ.

Genus Paphiopedilum, (*Pfitzer, Morphol. Stud. Orchid.* p. 11.)

Paphiopedilum *Victoria-Mariæ*; foliis late lineari-oblongis apice rotundatis et emarginatis, supra saturate viridibus tessellatis subtus pallidis unicoloribus, scapo valido rufo-brunneo superne inter flores hirsuto, racemo plurifloro diu persistente et florente, floribus seriatim evolutis, bracteis magnis cymbiformibus obtusis ciliatis herbaceis fusco-rubro striatis, ovario breviter pedicellato $2\frac{1}{2}$ pollicari stricto piloso, floribus amplis, sepalo dorsali $1\frac{1}{4}$ poll. lato erecto orbiculari viridi marginibus late albis ciliolatis, disco sanguineo hic illic striato, lateralibus in laminam labello suppositam late ovatam obtusam viridem confluentibus, petalis sepalis longioribus divaricatis linearibus tortis et undulatis ciliatis viridibus fusco-purpureo fasciatis et marginatis, labello elongato sepalo dorsali longiore obtuso purpureo, ore dilatato, marginibus viridibus, lobis lateralibus rostratis, staminodio ovato acuto basi pilosulo.

P. Victoria-Mariæ, *Rolfe in Orchid. Rev.* vol. iv. (1896) p. 364 (Paphiopedium).

Cypripedium Victoria-Mariæ, *Rolfe l.c.* p. 110.

The time has come, in the opinion of most orchidologists, for separating generically the tropical from the temperate species of *Cypripedium*, and adopting for the former the name *Paphiopedilum* proposed by Dr. Pfitzer ("Morphol. Stud. Orchid.," p. 11, 1886). Besides the wide difference of geographical distribution, the true *Cypripedia* being all natives of the colder temperate regions, and the *Paphiopedila* of tropical Asia and Australia, the following characters distinguish them. In *Cypripedium* proper the leaves are cauline, thin, and plicate in vernation, the perianth marcescent, and sepals valvate in æstivation. In *Paphiopedilum* the leaves are radical, coriaceous, and conduplicate in vernation, the perianth deciduous, and sepals imbricate in æstivation, the dorsal enfolding the lateral. Dr. Pfitzer has further included Reichenbach's (American) genus *Selenipedium* (as *Selenipedilum*) in his *Paphiopedilum*; and accepted Ascherson's ("Brandenb. Flora," p. 77, 1864) conversion

of *Cypripedium* into *Cypripedilum*, for etymological reasons.

Mr. Rolfe, on the other hand, rightly ("Orchid. Rev.," vol. iv. p. 364) retains *Selenipedium* on the grounds of its American habitat, unilocular ovary and globose seeds; but unfortunately, for the sake of uniformity in nomenclature, reduces *Paphiopedilum* to *Paphiopedium*.

As regards the conversion of *Cypripedium* into *Cypripedilum*, it involves a departure from Linnæus' meaning of the generic term, which he derived from κύπρις, *Venus*, and πόδιον, a *foot* ("Phil. Bot.," p. 186), and should have spelled *Cypripodium*. On the other hand, πεδίον, which would have given *Cypripedium*, is Greek for *a plain*, and πέδιλον (giving *Cypripedilum*), for *a slipper*. The simplest process, if change is desirable, would be to end all in *podium*:—thus, *Cypripodium*, *Selenipodium*, *Paphiopodium*, the only objection being the æsthetic one that, considering the shape of the lip of *Cypripodium*, the compliment to the goddess's foot is not a flattering one.

Paphiopedilum Victoria-Mariæ is a native of Sumatra, whence it was imported by Messrs. Sander of St. Albans, from whom the specimen here figured was procured. It flowered in the tropical Orchid-house of the Royal Gardens in March, 1897, and continued flowering for some months.

Descr.—Very robust. *Leaves* a foot long by one and a half to two inches broad, coriaceous, tip rounded, emarginate, with an apiculus in the sinus, upper surface bright green, mottled with darker green, under pale blueish green. *Scape* eighteen inches high, as thick as a goose-quill, dark purple-brown. *Racemes* erect, with many flowers, produced, one or two at a time, from below upwards on the stout, dark, red-brown, hirsute rachis. *Bracts* an inch long or more, cymbiform, obtuse, herbaceous, ciliate, green, with red-brown streaks. *Ovary* with short pedicel two and a half inches long, strict, erect, green, hairy. *Flowers* three inches long from the tip of the dorsal sepal to that of lip. *Dorsal* sepal orbicular, ciliolate, green, streaked with red, and with a broad, nearly white margin; lateral sepals united in an ovate, obtuse, green blade beneath the lip, about a third shorter than the latter. *Petals* two inches long, spreading horizontally, undulate and twisted, green, with

broad, red purple margins and nerves. *Lip* two inches long, by three-fourths of an inch broad below the broad mouth, slightly compressed laterally, dull purple, green round the mouth; side lobes erect, produced into short green horns. *Staminode* ovate, acute, hairy on the back towards the base.—*J. D. H.*

Fig. 1, Staminode and stigma, seen laterally; 2, staminode seen from above:—*Both enlarged.*

M.S. del. J.N. Fitch lith.

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Tab. 7574.

STROBILANTHES Dyerianus.

Native of Burma.

Nat. Ord. Acanthaceæ.—Tribe Ruellieæ.

Genus Strobilanthes, *Bl.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 1036.)

Strobilanthes (Bracteatæ) *Dyerianus*; frutex erectus, ramosus, hirtellus, foliis sessilibus ovatis ovato-lanceolatisve acuminatis suprà basin constrictum panduriformibus serrulatis utrinque sparse hirtellis supra viridibus plagis inter nervos albo-roseis variegatis, subtus junioribus præsertim roseo-purpureis, spicis axillaribus densifloris calycibusque glanduloso-pilosis, bracteis calycibus brevioribus spathulatis persistentibus, bracteolis sepalisque linearibus glanduloso-pilosis, corollæ 1½-pollicaris violacei lente curvi tubo e basi brevi angusto modice ventricoso, limbi brevis lobis latioribus quam longis revolutis, staminibus 4, 2 longioribus perfectis 2 brevioribus antheris cassis, filamentis glaberrimis, ovario glaberrimo.

S. Dyerianus, *Hort. Sander, ex Masters in Gard. Chron.* 1893, vol. i. p. 442. *Garden & Forest*, vol. vi (1893) p. 194. *Martinet in Le Jardin*, 1893, p. 151, fig. 58. *Pynaert in Journ. d'Hortic. Belg.* 1894, p. 133. *Journ. Hortic.* Ser. 3, vol. xxvi. p. 359, fig. 66. *Kew Bullet.* 1894, App. ii. p. 51.

The history of this beautiful plant, as recorded at Kew, is, that it was discovered in Burma by Boxall (Collector for Hugh Low & Co.), who presented plants to the Botanical Gardens of Singapore, whence it was introduced into the Royal Gardens, Kew, in October, 1892, with the name "*Strobilanthes, sp. nov.*, Boxall." Young plants were distributed from Kew, one of which was exhibited at the Ghent Horticultural Exhibition of 1893 by Messrs. Sander & Co., of St. Albans, under the name of *S. Dyerianus*, which attracted attention, owing to the beautiful rose-purple of the undersurface of the leaves when young. Its nearest ally is *S. auriculatus*, Nees, figured in Wallich's "Plantæ Asiaticæ Rariores, vol. iii. t. 295, a native of Central India and Burma.

The specimen figured is of two lateral inflorescences and a leaf, communicated by Mr. Lynch from the Botanical Gardens of Cambridge University, who flowered the plant in January, 1894. The figure gives no idea of the beauty

of the thyrsiform flowering summit of the stem, the size of which far exceeds the dimensions of even a quarto plate.

Descr.—A branching, soft-wooded shrub, rough with scattered short hairs on the branches and leaves, and with gland-tipped hairs on the inflorescence; branches quadrangular, green. *Leaves* six to eight inches long, sessile, elliptic-lanceolate, acuminate, serrulate, panduriform in the lower fourth, with an orbicular, cordate base, bright green above, with pale rosy-white bands, of a lucid, satiny lustre between the nerves; rose-purple beneath, especially in a young state, with twelve to fifteen pairs of strong, arching nerves and cross-nervules. *Inflorescence* of erect spikes leafy at the base; flowers crowded, an inch and a half long; bracts one-eighth to one-fourth of an inch long, broadly ovate, acuminate, green, spreading, persistent. *Calyx* one-third of an inch long, unequally 5-lobed to the middle; lobes linear, obtuse. *Corolla* gently curved, one to one and a quarter inch long, gradually dilated and ventricose from a short narrow tube, pale violet-blue, with a white ventral keel; limb three-fourths of an inch across the mouth; lobes five, very short, broader than long, revolute. *Stamens* included, two with perfect anthers; two much shorter, with imperfect anthers; filaments glabrous. *Ovary* oblong; style filiform, glabrous.—*J. D. H.*

Fig. 1, Calyx and bracteoles; 2, portion of base of corolla and stamens; 3 and 4, perfect anthers; 5, ovary;—*All enlarged.*

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Tab. 7575.

LATHYRUS SPLENDENS.

Native of Southern California.

Nat. Ord. Leguminosæ.—Tribe Vicieæ.

Genus Lathyrus, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 526.)

Lathyrus *splendens*; perennis, scandens, glaber v. parce pubescens, caule gracili angulato, foliis cirrhiferis, foliolis 4–5-jugis ¾–1 poll. longis aliis ellipticis obtusis subacutisve aliis anguste linearibus marginibus interdum convolutis, stipulis parvis 2-fidis integris v. laciniatis ciliatis, racemis elongatis basi bifloris superne 7–10-floris, floribus magnis, petalis saturate sanguineis carina pallidiore, calyce fere hemispherico teretiusculo breviter 5-dentato dentibus 2 posticis ceteris paullo longioribus, vexillo pollicare orbiculare marginibus revolutis, alis ovato-oblongis carina acuta brevioribus et angustioribus, ovario pubescente, legumine 3-pollicari compresso glabro 10–20-spermo.

L. splendens, *Kellog in Proc. Calif. Acad.* vol. vii. (1876) p. 90. *Masters in Gard. Chron.* 1893, vol. i. p. 258; 1897, vol. i. p. 315, fig. 106. *The Garden*, 1897, Aug. p. 122, *cum Ic.*

This is certainly the most beautiful species of the large genus to which it belongs, consisting of about 150 species, of which ten are Western American. Its nearest ally is *L. vestitus*, Nutt., of California, of which indeed S. Watson, in his "Botany of California" (vol. ii. p. 442) suspected (judging from its description alone) that it was a variety. *L. vestitus* is, however, a much stouter plant, never so tall, with many more and larger leaflets, much larger stipules, and with smaller, pale rose-coloured or violet flowers not half the size.

Lathyrus splendens is a native of the high desert region of Southern California, where it flowers throughout the winter, and is called the "Pride of California." It was discovered in 1882, in the San Bernardino Valley, by Mr. Pringle. There is also a specimen of it in the Kew Herbarium, collected in San Diego by Mr. Cleveland.

Seeds of *L. splendens* were received at the Royal Gardens, Kew, from Professor Greene of the Catholic University, Washington, in 1894. A plant raised from them was planted in the border of a house devoted to Cape bulbs, where it formed a dense mass of stems ten feet

long, that flowered in March, 1897, and has ripened seeds. In the previous summer a plant of it had been tried in the open air, when it grew freely, but did not survive the winter.

Descr.—*Stem* glabrous, or sparsely pubescent, six to twelve feet high and more, climbing, four-winged, sparingly branched. *Leaves* two to four inches long, petiole short, rachis slender, terminating in a forked tendril. *Leaflets* eight to ten, one to nearly two inches long, opposite and alternate, from elliptic to narrowly linear, obtuse, flat, or with the sides involute, nerves very slender, nervules finely reticulate above; stipules one-tenth to one-eighth of an inch long, bifid, lobes diverging, acute, entire, or toothed. *Raceme* elongate, seven to ten-flowered, with a pair of flowers at the base; flowers shortly pedicelled, nearly two inches long; petals deep blood-red, the keel paler. *Calyx* shortly tubular, five-toothed, green, upper teeth longest. *Standard* suborbicular when spread out, reflexed, tip emarginate, sides revolute, wings two-thirds of an inch long, obliquely oblong, obtuse, shorter and narrower than the pale, rose-colrd., acute keel, which is an inch long or more. *Ovary* pubescent. *Pod* three inches long, compressed. glabrous, ten- to twenty-seeded.—*J. D. H.*

Fig. 1, Involute leaflet; 2, calyx and stamens; 3, ovary :—*All enlarged.*

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J.I. Macfarlane del, J.N Fitch lith.

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Tab. 7576.

SIEVEKINGIA Reichenbachiana;

Native of Ecuador.

Nat. Ord. Orchideæ.—Tribe Vandeæ.

Genus Sievekingia, *Reichb. f.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 477.)

Sievekingia *Reichenbachiana*; pseudobulbis ovoideis costatis monophyllis, foliis petiolatis elliptico-lanceolatis acuminatis plicatis subtus 5-costatis, pedunculo decurvo vaginato sub 6-flore, floribus pendulis corymbosis, bracteis cymbiformibus, sepalis patentibus ovatis subacutis concavis membranaceis pallide stramineis, petalis suberectis aureis, sepalis æquilongis linearibus labellique lobis laxe longe subpectinatim ciliatis, labelli immobilis explanati aurei sanguineo maculati lobis lateralibus dimidiato-ovatis erectis, intermedio parvo lineari, disco crista erecta lacera aucto, columna aurea supra medium alata, anthera 2-loculari vertice rotundata, polliniis 2 ellipsoideis, stipite ope glandulæ apice subulato rostello affixo.

Sievekingia Reichenbachiana, *Rolfe in Kew Bullet.* 1898, ined.

Gorgoglossum Reichenbachianum, *F. C. Lehm. mss. ex Gard. Chron.* 1897, vol. i. p. 346.

Sievekingia is a genus of the subtribe *Oncidieæ*, established by Reichenbach f. ("Beitr. Syst. Pflanzenk.," p. 3) for a Costa Rican Orchid, *S. suavis*, Rchb. f. To this three species have since been added, namely, *S. fimbriata*, Rchb. f. ("Flora, 1886," p. 449), also from Costa Rica, *S. Jenmani*, Rchb. f. (l. c. 450) from British Guiana, and the subject of the figure here given.

S. Reichenbachiana was discovered in 1879 by Mr. F. C. Lehman on the Andes of Ecuador, at an elevation of 2000 to 3500 ft., when only a single specimen was met with. In 1890 its discoverer undertook to search for more, but found only five, on his estate at Cauca. Of these one came into the possession of Sir Trevor Lawrence, who obligingly sent the drawing here reproduced.

Descr.—*Pseudobulbs* clustered, an inch long, ovoid or obpyriform, ridged, young green, old pale, with scattered blood-red blotches; sheaths pale, speckled with red. *Leaves* four to five inches long, petioled, elliptic-lanceolate, acuminate at both ends, plicate, dark green on both sur-

faces, with five pale sunk nerves above, answering to as many strong pale ribs beneath; petiole one to one and a quarter inch long, pale yellow, speckled with red. *Flowers* about six, in a pendulous corymb, terminating a flexuous sheathed, pale green peduncle, about two inches long; sheaths and bracts a fourth of an inch long, cymbiform, subacute, pale green, speckled with red; pedicel with the ovary one to one and a quarter inch long. *Perianth* an inch and a quarter in diameter across the lateral sepals. *Sepals* spreading, subequal, ovate, subacute, concave, membranous, pale straw-colrd. *Petals* as long as the sepals, suberect, linear, acute, golden-yellow, and as well as the lip pectinately margined with long, flexuous, spreading golden hairs. *Lip* explanate, side lobes large, ascending, dimidiate-ovate, subfalcate, golden-yellow, blotched with blood-red, midlobe small, linear, lacerate; disk with an oblong plate between the side lobes, that is cleft into five subulate teeth towards the base of the lip, and two longer awl-shaped ones towards the midlobe. *Column* dilated above the middle. *Anther* produced and truncate in front, tip rounded; pollinia 2, ellipsoid, seated on the dilated apex of the strap, which is attached by a gland to the subulate tip of the produced rostellum.—*J. D. H.*

Fig. 1, Petal; 2, lip; 3, column and pollinium; 4, anther, 5 and 6, pollinia:—*All enlarged.*

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Tab. 7577.

RICHARDIA Elliottiana.

Native of South Africa.

Nat. Ord. Aroideæ.—Tribe Philodendreæ.

Genus Richardia, *Kunth*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 982.)

Richardia *Elliottiana*; elata, foliis amplis late ovato-rotundatis apiculatis basi profunde cordatis lobis approximatis v. incumbentibus albo-maculatis, costa crassa, spatha infundibulari-campanulata apice recurvo subulato tertia parte laxe convoluta tota aurea ore expansa intus laevi, marginibus recurvis, spadice subsessile, ovarii apice tumido, stigmate sessili, fructibus crassis.

R. Elliottiana, *Knight ex W. Wats. in Gard. Chron.*, 1892, vol. ii. p. 123. *Eng. de Duren in Rev. Hort. Bely.* vol. xxiii. (1897) p. 13.

R. Elliottiana is much the largest species of the genus hitherto described. It is alluded to under Tab. 7397, also a golden-spathed species, as a then imperfectly known plant, which may be a variety of *R. albo-maculata*, Hook., a suggestion endorsed by M. de Duren when figuring it in the "Revue Hort. Belgique," though on comparison of these two plants the differences between them are abundantly manifest. *R. albo-maculata* (see Tab. 5740) belongs to the hastate-leaved section of the genus, and has a comparatively small white spathe, with a much longer, narrower, tapering limb, and the base of the spathe is purple within. From *R. Pentlandii* (Tab. 7397) the only other known golden-spathed species, *R. Elliottiana* differs in its much larger size, broad spotted leaves, more deeply cordate at the base, the smooth surface of the limb of the spathe within, and the absence of purple colouring at its base, also in the large ovaries and sessile stigma. The precise habitat of *R. Pentlandii*, which was not known when the species was first published, is the Mapoch district, Lydenburg, Transvaal.

R. Elliottiana was raised from a batch of South African seeds by Mr. Knight, gardener to Captain Elliott, of Farnboro' Park, Hants, in 1896, and was exhibited in London

in 1892. The specimen figured flowered in the Royal Gardens, Kew, in 1897, and formed its large berries in the following August.

Descr.—Tall, very robust. *Leaves* nearly a foot long and seven inches broad, orbicular-ovate, deeply cordate, with an open sinus, or with overlapping basal lobes, apiculate, green, with oblong, transparent blotches, margin waved, midrib beneath very stout; petiole dark green, as long as the blade, deeply channelled in front. *Peduncle* nearly a yard high, terete, dark green. *Spathe* six inches long, bright golden-yellow throughout (with no purple at the base within); tube between funnel-shaped and campanulate; limb three inches long and broad, quite smooth within, tip caudate. *Spadix* sessile, about three inches long. *Anthers* obconic, minute, orange-yellow. *Ovaries* large, green, with a low crown and a small sessile coloured stigma. *Fruit* a cluster of many small, imperfect berries, and ten or a dozen large subglobose or misshapen large ones, one inch in diameter, with rounded tips, and a minute black scar in the position of the stigma.—*J. D. H.*

Fig. 1, Base of spathe cut open, and spadix, of the *nat. size*; 2, anther; 3, ovary:—both *enlarged*; 4, ripe berry of the *nat. size*.

M.S del J.N.Fitch lith.

Vincent Brooks Day & Son Imp

Tab. 7578.

PAPHIOPEDILUM Chamberlainianum.

Native of Sumatra.

Nat. Ord. Orchideæ.—Tribe Cypripedieæ.

Genus Paphiopedilum, *Pfitzer* (*Morphol. Stud. Orchid.* p. 11.)

Paphiopedilum *Chamberlainianum*; elatum, robustum, foliis lineari-oblongis obtusis tessellatis, scapo robusto fusco-purpureo superne hirsutulo, racemo multifloro demum elongato diu florente, rachi robusto glanduloso-tomentoso, bracteis magnis herbaceis cymbiformibus apice rotundatis viridibus basi purpureis persistentibus, ovario gracile stricto breviter pedicellato tomentoso, floribus amplis, sepalis viridibus dorso hirsutis, dorsali orbiculari ½-poll. lato, apice convoluto, marginibus undulatis ciliatis intus basi et nervis 5–7 purpureis, lateralibus in laminam ellipticam labello multo breviorem connatis, petalis 2½ poll. longis divaricatis linearibus viridibus subtortis marginibus crispato-undulatis purpureis ciliatis, disco lineis purpureis interruptis notato, labelli sacco inflato roseo-purpureo creberrime punctulato, ore colloque virescente, **staminodio late ovato, basin versus setuloso.**

P. Chamberlainianum, *O'Brien, ex Pfitzer in Engl. Bot. Jahrb.* vol. xix. (1895) 41. *Rolfe in Orchid. Review*, vol. iv. (1896) p. 4 (Paphiopedium). ***Kerchof, Livre des Orchid.* p. 454 (Paphiopedium).**

Cypripedium Chamberlainianum, *O'Brien in Journ. Hortic.* vol. xxiv. (1892) pp. 104 et 294, fig. 49; *in Gard. Chron.* 1892, vol. i. p. 234, fig. 34. *Pucci in Bull. Soc. Tosc. Ort.* vol. vii 1892, p 88, t. 3 (*ic. Gard. Chron. repet.*). *Pynaert in Rev. Hortic. Belg.* vol. xviii. (1892) p. 101, fig. 10 *ic. Gard. Chron. repet.*). *Duren, l. c.* vol. xix. (1893) p. 141, *cum ic. pict. Journ. Hortic. Ser.* III. vol. xxx. p. 432. *The Garden*, vol. xlv. (1893) p. 304, *cum ic. Williams' Orchid. Grower's Man.* Ed. VII. p. 242. *Kranzl. in Reichb. Xen. Orchid.* vol. iii. p. 145, t. 284.

The nearest ally of the magnificent Orchid here figured is *P. Victoria-Mariæ*, Rolfe (t. 7573) under which species I have given the reasons for adopting the unfamiliar generic name of *Paphiopedilum*. Both are natives of Sumatra, in both the raceme is, as it were, perennial, continuing for a year or more to give off a succession of flowers, of which one, two, or rarely three, are open at a time. In this respect, and those of the mottled leaves, the stout, dark purple scape, large boat-shaped herbaceous bract, orbicular green upper sepal, twisted petals, and open mouth of the lip, the two species agree; but *P. Chamberlainianum* differs in the much broader, shorter leaves, much more inflated lip, the almost orbicular

staminode, and in the coloration of the flower. The sketch of the whole plant given in the *Gardener's Chronicle* represents the sceptriform raceme, upwards of twenty inches long, with expanded flowers below, followed by a series of many empty bracts above, bearing apparently neither buds, flowers, nor fruit, quite unlike any other orchideous plant known to me. Mr. Rolfe informs me that Messrs. Sander showed him a native dried specimen with thirty-two bracts on the raceme. The fine figure in the *Gardener's Chronicle* represents a plant with larger flowers than that here figured, much broader petals strongly twisted, and with margins neither undulate, ciliate, nor purple.

P. Chamberlainianum was imported from Sumatra by Messrs. Sander & Co., and named by Mr. O'Brien in honour of the Right Honourable the Secretary for the Colonies, who is distinguished no less for his public services than for his devotion to horticulture. The specimen figured flowered in the Orchid House of the Royal Gardens, Kew, in March, 1897.

Descr.—A very robust, tall species. *Leaves* eight to ten inches long, by one and a quarter to nearly two inches broad, obtuse or subacute, coriaceous, bright green, tessellated with darker green above, pale beneath, with a stout midrib. *Scape* eight to twelve inches high, dark purple-brown, hairy upward. *Raceme* many-flowered, continuously flowering; rachis stout, glandular-tomentose with spreading hairs, dark red brown. *Bracts* one and a half inches long, boat-shaped, tips rounded, strongly nerved, green; dark purple at the base, ciliate. *Ovary* very shortly pedicelled, one and a half inches long, strict, densely glandular-tomentose. *Sepals* green, dorsally hirsute; dorsal nearly orbicular, an inch and a half in diameter, margins undulate, ciliate with long hairs, seven-nerved, red-purple in front towards the base, and with red-purple nerves; lateral sepals connate in an elliptic-oblong blade, smaller than the dorsal, and much shorter than the lip. *Petals* two and a half inches long by one-third of an inch broad, linear, more or less twisted obtuse, green, with strongly waved or crisped ciliate, dark purple margins, and with parallel lines of purple spots on the disk. *Lip* an inch and a half long, by

nearly an inch in diameter, inflated, slightly contracted below the open mouth, rose-colrd., speckled with dark red, except around the green mouth and subacute posterior angles. *Staminode* rather small, ovate, apiculate, purplish. —*J. D. H.*

Fig. 1, Upper and 2, side view of staminode and stigma :—*Both enlarged.*

M.S. del. J.N. Fitch lith.

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Tab. 7579.

DAPHNE Blagayana.

Native of Styria and Carniola.

Nat. Ord. Thymelæaceæ.—Tribe Euthymelæeæ.

Genus Daphne, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 190.)

Daphne (Daphnanthes) *Blagayana*; fruticulus vage ramosus, foliis glabris apices versus ramorum confertis quasi verticillatis subsessilibus obovatis v. oblanceolatis obtusis basi angustatis tenuiter nervosis luride viridibus, capitulis sessilibus multifloris, bracteis obovato-oblongis imbricatis sericeis intimis angustioribus perianthii tubum subæquantibus, perianthii pallide straminei tubo ¾ pollicari subsericeo, lobis ovatis obtusis tubo triente brevioribus, ovario longe stipitato pubescente, stylo brevi, bacca carnosa alba.

D. Blagayana, *Frazer in Flora*, vol. xxi. pars. I. (1838) p. 176. *Reichenb. Ic. Fl. Germ.* vol. xi. t. 555, fig. 1180. *Meissn. in DC. Prodr.* vol. xiv. p. 534. *Regel, Gartenfl.* vol. xxix. (1880) p. 228, t. 1020-1. *Flore des Serres*, vol. xxii. (1877) p. 2313. *The Garden*, vol. xiv. (1878) p. 200, t. 143. *Gard. Chron.* 1880, vol. i. p. 245, fig. 47: 1882, vol. i. p. 505, fig. 80. ***K. Koch, Dendrolog.*** **vol. ii. p. 377.**

Though discovered in 1837 by Count Blagay, it is only comparatively lately that this most sweet-scented little Spurge-laurel has been introduced into cultivation in England, which was effected by Messrs. Veitch about twenty years ago. It belongs to the section *Daphnanthes*, C.A.M., characterized by the coriaceous persistent leaves, and terminal more or less capitate flowers, and is nearly allied to *D. collina*, Sm. (see Tab. 428) of the south of Europe, which is well distinguished by its villously silky branches, short bracts, and much shorter purple perianth. According to the analysis in Reichenbach's figure, the ovary is nearly sessile, but it is narrowed into a long stipes both in the cultivated specimen here figured and in indigenous ones.

D. Blagayana is a native of calcareous rocks, in company with *Erica carnea*, in the Carinthian Alps of Carniola and Styria. It is now frequent in English gardens, flowering in March.

Descr.—A small, laxly branched spreading shrub, a foot

and a half high ; branches as thick as a crow-quill, reddish-brown, naked except at the summit, where they are sparingly silky. *Leaves* one to one and a half inches long, crowded towards the tips of the branches, sessile, spreading, oblong-obovate or oblanceolate, obtuse or apiculate, coriaceous, glabrous on both surfaces, dull dark green above, pale beneath ; nerves very obscure. *Heads* of flowers two inches across or more, terminal, sessile ; bracts as long as the perianth-tube, sessile, obovate-oblong, apiculate, membranous, pale green, silky, inner narrow. *Perianth* sessile, very pale straw-colrd., almost white, tube three-quarters of an inch long, sparsely silky ; lobes one-fourth of an inch long, ovate, obtuse, spreading. *Stamens* included, tips of the upper four on a level with the mouth of the perianth ; anthers linear-oblong. *Disk* membranous, about half as long as the stipes of the ovary. *Ovary* narrowed into a stipes as long as itself, oblong, silky, style very short, stigma capitate. *Berry* white.—*J. D. H.*

Fig. 1, Perianth laid open ; 2 and 3, stamens ; 4, pistil and disk :—*All enlarged.*

M.S. del, J.N. Fitch lith

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Tab. 7580.

DASYSTACHYS Drimiopsis.

Native of South-east Tropical Africa.

Nat. Ord. Liliaceæ.—Tribe Asphodeleæ.

Genus Dasystachys, *Baker*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 789.)

Dasystachys *Drimiopsis*; fibris radicalibus cylindricis, foliis rudimentariis dorso rubro-brunneo maculatis, foliis basalibus 5–6 linearibus viridibus recurvatis, pedunculo elongato simplici foliis floribus reductis prædito, racemo denso subspicato oblongo, pedicellis brevissimis, bracteis brunneis e basi lata linearibus, perianthio campanulato albo segmentis ovatis supra basin patulis, staminibus exsertis, stylo elongato, fructu acute angulato profunde trilobato.

D. Dri miopsis. *Baker, ex Benth. & Hook. f. Gen. Plant.* vol. iii. p. 789.
Anthericum Drimiopsis, *Baker in Journ. Linn. Soc.* vol. xv. p. 301.

This genus is very different in habit from *Chlorophytum*, with which Engler has united it. All the species have small flowers arranged in dense subspicate racemes. Fifteen species are now known, all of which are confined to the mountainous regions of Tropical Africa. This is the first of them which has been introduced into cultivation. The living plant was brought to Kew in 1892, along with many others, by the late Mr. John Buchanan, C.M.G., who did so much to increase our knowledge of the botany of British Central Africa. It flowered at Kew for the first time in October, 1896, having been cultivated in a warm greenhouse. It was first collected in 1859 by Sir John Kirk, in the Zambesi valley, between Shupanga and Tette.

Descr.—*Root-fibres* many, cylindrical. *Sheath-leaves* spotted on the back with claret-brown. *Produced leaves* about six in a dense basal rosette, linear, bright green, moderately firm in texture, the longest above a foot long. *Peduncle* terete, erect, two or three feet long, bearing several reduced leaves. *Raceme* very dense, subspicate, oblong, three or four inches long; pedicels very short, not articulated; bracts reddish-brown, linear from a dilated

base. *Perianth* campanulate, pure white, one-sixth of an inch long; segments ovate, spreading from above the base. *Stamens* exserted; anthers small, oblong. *Capsule* acutely angled, deeply three-lobed.—*J. G. Baker.*

Fig. 1, A flower, with pedicel and bract; 2, front view of anther; 3, back view of anther; 4, pistil:—*all enlarged*; 5, the whole plant *much reduced*.

S del J N Hatch lith.

L Reeve & Cº London

Tab. 7581.

ANEMONE vernalis.

Native of Mountains of Europe.

Nat. Ord. Ranunculaceæ.—Tribe Anemoneæ.

Genus Anemone, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 4.)

Anemone (Pulsatilla) *vernalis*; acaulis, foliis ovatis pinnatisectis, segmentis paucis oppositis sessilibus cuneatis v. cuneato-oblanceolatis irregulariter 3–5-fidis glabris v. laxe pilosis, scapo robusto plus minusve villoso unifloro, involucri villosissimi bracteis sessilibus in segmenta linearia brunnea ad basin partitis, floribus amplis erectis, sepalis 6 elliptico-oblongis obtusis concavis dorso villosis pallide lilacinis, staminibus perplurimis extimis imperfectis, acheniis villosis in caudas sericeo-villosas graciles productis.

A. vernalis, *Linn. Sp. Pl.* p. 538. *Ait. Hort. Kew.* Ed. 2, vol. iii. p. 337. *Œder, Fl. Dan.* vol. i. tab. 29. *Palmstr. Svensk. Bot.* vol. x. t. 337. *DC. Syst.* vol. i. p. 189; *Prodr.* vol. i. p. 16. *Sturm, Deutsch. Flor.* vol. vi. t. 24. *Koch, Syn. Fl. Germ.* Ed. 2, p. 7. *Gren. & Godr. Fl. Franc.* vol. i. p. 10. *Bertol. Fl. Ital.* vol. v. p. 461. *Ledeb. Fl. Ross.* vol. i. p. 20. ***Journ. Horticult.* Ser. 3, vol. xxxii. p. 223.**

Pulsatilla vernalis, *Mill. Dict. Anem.* No. 3 *Lessing in Linnæa*, vol. ix. (1834) p. 171. *Sweet, Brit. Fl. Gard.* Ser. I. vol. iii. t. 205. *Reichb. Ic. Fl. Germ.* **vol. iv. t. 59.**

The most curious fact in the history of this beautiful plant is that it is not a native of the British Islands, for it has a very wide range as an alpine and subalpine plant throughout Europe and in North Asia, ascending to eight thousand feet in the Alps. Its limits are in the West from Norway and Sweden to Central France and the Pyrenees; further East, from Saxony and Livonia to the Swiss, Austrian, and Italian Alps; and still further East (according to Ledebour) from the Ural Mts. to Tobolsk in Siberia. Thus extending through 20° of latitude and 75° of longitude. Its nearest ally is the British *A. Pulsatilla*.

Anemone vernalis was introduced into England before 1752, at which period it was cultivated by Phillip Miller at Chelsea. According to Robinson's "Alpine Plants for English Gardens," it is rare, and seldom seen in good condition in this country. The specimen figured here was of a pot plant grown in the Herbaceous Department of the

Royal Gardens, which flowered in the middle of March in the very early season of 1897.

Descr.—A more or less hairy or villous perennial. *Leaves* radical, three to five inches long, long-petioled, ovate in outline, pinnatisect, pinnules two to three pairs with an odd one, opposite, cuneiform, three- to five-lobed; terminal largest, three-cleft, lobes obtuse toothed. *Peduncle* stout, erect, one-fld., green; involucres an inch long, bracts brown, shaggy, cleft to the base into narrow, erect, linear segments. *Flower* erect, or slightly inclined. *Sepals* six, subequal, spreading and incurved, elliptic, obtuse, nearly white and glabrous within, dorsally violet-purple, with a broad white margin, villous with long hairs. *Stamens* very many, in a dense, globose head; anthers small, yellow, those of the outer stamens imperfect. *Ripe achenes* oblong, villous, produced into a long, slender, silkily villous tail.—*J. D. H.*

Fig. 1, Stamen; 2, 3, 4, imperfect do.:—*all enlarged*; 5, ovary of the *nat. size*; 6, achene with style, *enlarged.*

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Tab. 7582.

CAMPTOSEMA pinnatum.

Native of Brazil.

Nat Ord. Leguminosæ.—Tribe Phaseoleæ.

(Genus Camptosema, *Hook. & Arn.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 536.)

Camptosema *pinnatum*; frutex 3–5-pedalis, parce ramosus, glaberrimus, foliis alternis petiolatis 16–18 poll. longis; foliolis 3-jugis cum impari, 6–7 poll. longis, petiolulatis, ovatis, caudato-acuminatis, petiolo basi incrassato, racemo brevi densifloro, rhachi robusto, floribus breviter pedicellatis fasciculatis nutantibus, calyce $\frac{2}{3}$ poll. longo late tubuloso basi rotundato glabro, dentibus brevissimis latis obtusis, vexillo 2-pollicari oblongo obtuso complicato in unguem $\frac{1}{4}$ poll. longum angustato nec appendiculato nec basi calloso, alis vexillo fere æquilongis falcato-oblongis obtusis basi cuneatis longe unguiculatis, carinæ petalis vexillo æquilongis sed angustioribus rectis, staminibus monadelphis vexillari a basi soluto, antheris linearibus, ovario longiuscule stipitato glabro 8–10-ovulato, stylo gracili recto, stigmate capitellato, legumine plano-compresso 7 poll. longo 2 poll. lato, **seminibus pollicaribus reniformibus.**

C.? pinnatum, *Benth. in Mart. Fl. Bras.* vol. xv. pars. I. p. 325. *Wawra, Bot. Ergebn. Max.* I. p. 6, t. 33.

Piscidia erythrina, *Vell. Fl. Flum.* vol. vii. t. 100, text. 304 (non Linn.).

Goranâ-timbo, *Bras.*

Camptosema is a genus of ten tropical South American species, belonging to the subtribe *Galactieæ* of *Phaseoleæ*, closely allied to *Canavalia* and *Pueraria*. One species has been figured in this work, tab. *C. rubicundum*, Hook. & Arn. (tab. 6808) a handsome climber, with small trifoliolate leaves, and with long racemes of ruby-red flowers, not half the size of those of *C. pinnatum*.

C. pinnatum is a native of shady woods, banks of rivers, &c., in the Province of Minas Geraes, Brazil.

The accompanying figure was made from a plant raised from seed sent in 1888 by Dr. Glaziou, Director of the Botanical Gardens of Rio de Janeiro, to the Royal Gardens, Kew, which flowered in the Palm House in July, 1897.

Descr.—A woody shrub, three to five feet high, glabrous in all its parts. *Leaves* one to one and a half feet long, alternate, shortly petioled; leaflets three pairs and a terminal, shortly petiolulate, drooping, six to seven inches long

by two to three inches broad, oblong or ovate-oblong, obtusely caudate-acuminate, base rounded, membranous, bright green, paler beneath, nerves six to eight pairs; petiole with a swollen cylindric base, and slender rhachis, grooved above. *Flowers* two inches long, in a short, stout raceme, two to three inches long from the old wood; bracts small, deciduous; pedicels short. *Calyx* one half to two-thirds of an inch long, cylindric, terete, very shortly five-toothed, greenish purple; base rounded. *Petals* pale, bright red-purple, of nearly equal length, straight, narrow, obtuse; standard oblong, narrowed into a slender claw, dorsally rounded, sides incurved, wings dimidiate-oblong, subfalcate, claw long, slender; keel-petals like the wings, but straighter, as long-clawed. *Stamens* ten, nine united for two-thirds their length in a narrow tube, tenth very slender, free; anthers very small, linear-oblong. *Ovary* stipitate, very slender, narrowed into a filiform straight style, with a minute stigma, many-ovuled.—*J. D. H.*

Fig. 1, Calyx and stamens; 2, wing petal; 3, keel-petal; 4, ovary and disk:—*All enlarged*; 5, *reduced* view of leafing branch.

M. S. del, J. N. Fitch lith

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Tab. 7583.

ERYTHRONIUM Hartwegi.

Native of California.

Nat. Ord. Liliaceæ.—Tribe Tulipeæ.

Genus Erythronium, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii p. 819.)

Erythronium *Hartwegi*; tubere parvo ovato-oblongo, foliis oblongo-lanceolatis oblanceolatisve supra saturate viridibus striis pallidioribus laxe reticulatim notatis, floribus 1–3 amplis, perianthii segmentis 1½–2-pollicaribus lanceolatis acuminatis patenti-recurvis albis basin versus bicarinatis aureis, filamentis quam antheras lineares stramineas multoties brevioribus, ovario parvo obovoideo-oblongo triquetro-stylo columnari breviore.

E. Hartwegi, *S. Wats. in Proc. Amer. Acad.* vol. xiv. (1879) p. 261; *Bot. Calif.* vol. ii. p. 170. *Gard. Chron.* 1896, vol. ii. p. 361.

E. grandiflorum, *Benth. Plant. Hartweg.* p. 339 (*non Pursh.*).

Erythronium Hartwegi is very closely allied to *E. grandiflorum*, Pursh., of Washington Territory and Northern California, of which the leaves are not mottled, the perianth segments strongly recurved, yellow, or cream-coloured, and the filaments longer and more slender. It is a native of the Sierra Nevada, where it was discovered in Butte County by Hartweg, and in Plumas County, and other localities.

The genus *Erythronium*, of which there are seven generally recognized species, several doubtful, and many spurious, is greatly in need of a careful study and illustration by good drawings. This can only be effected through cultivation, for the characters, of the flower especially, are more or less obliterated in herbarium specimens. There are various obscure forms in North-West America, which is no doubt the headquarters of the genus, and I would strongly recommend them to the attention of the Botanists, and especially the Botanic Gardens, of California.

The handsome species here figured has for a long period been in cultivation at Kew, where it flowers in an open

border in March. The individual specimen was from a pot plant, grown in a frame.

Descr.—Whole plant four to six inches high. *Tubers* small, ovoid-oblong. *Leaves* sessile, inserted close together, about four inches long, lanceolate, acuminate, undulate, narrowed to the sheathing base, dark green above, with paler green areolar reticulations, uniformly green beneath. *Scapes* one or two, slender, one-fld. *Flowers* about three inches in diameter. *Perianth-segments* spreading and recurved, white, pale golden-yellow at the base. *Stamens* almost included in the connivent bases of the segments, filaments very short; anthers linear, straw-coloured. *Ovary* small, obovoid-oblong, trigonous, shorter than the columnar style; stigmas three, shortly linear, revolute.—*J. D. H.*

Fig. 1, Base of perianth segment, seen from within; 2, stamen; 3, anther:—*All enlarged.*

M.S. del J.N. Fitch lith

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Tab. 7584.

DRACAENA Godseffiana.

Native of the Coast of Guinea.

Nat. Ord. Liliaceæ.—Tribe Dracaeneæ.

Genus Dracaena, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 779.)

Dracaena (Surculosæ) *Godseffiana*; frutex diffusus ramosus, ramis gracilibus subverticillatis, foliis oppositis v. ternatim verticillatis submembranaceis ellipticis acuminatis basi acutis in petiolum brevissimum angustatis albo maculatis, racemo brevi breviter pedunculato e ramulo dependente ascendente, floribus pollicaribus ternatim fasciculatis breviter pedicellatis, bracteis lanceolatis membranaceis pedicellos æquantibus, bracteolis 2 minutis, perianthii flavo-virescentis tubo gracili basi clavato, lobis tubo paullo brevioribus linearibus obtusis, filamentis lobis perianthii æquilongis, antheris oblongis, stylo gracili exserto, baccis $\frac{1}{2}$—$\frac{2}{3}$ poll. diam. globosis coccineis.

D. Godseffiana, *Hort. Sander, ex Baker in Gard. Chron.* 1894, vol. ii. p. 212. *Southron in The Garden*, 1896, p. 276, *ic Xylog.*

There are in tropical Western Africa a considerable number of species of *Dracaena*, differing in habit from their congeners, in having slender scandent, or at least rambling, branching stems. Of these the type is *D. surculosa*, Lindl., a spotted-leaved variety of which is figured at tab. 5662 of this work; and there are others described and undescribed, which will be published in the forthcoming volume of the "Flora of Tropical Africa," a work now far advanced by the staff of the Herbarium of Kew. Of these *D. surculosa* is that to which *D. Godseffiana* is most nearly allied, the great difference between them being in the almost capitate inflorescence of *D. surculosa*. Both vary considerably in the form and spotting of the leaves. *D. Godseffiana* was first sent to Kew in 1892, by Mr. Henry Millen, Curator of the Botanical Station at Lagos. It was subsequently imported by Messrs. Sander & Co. of St. Albans. It forms a very decorative stove shrub, flowering in March.

Descr.—A slender, rambling, branched, subscandent shrub; stem flexuous, about as thick as a crow-quill, pale brown, annulate. *Leaves* three to nearly five inches long, opposite, or ternately whorled, very shortly petioled, elliptic

or elliptic-oblong or -lanceolate, acuminate, base acute, membranous, many-nerved, with a distinct midrib, bright green above, with irregularly disposed orbicular large and small white spots, paler beneath. *Racemes* two to three inches long, ascending from the tips of the drooping branches, peduncle short, with lanceolate, membranous, erect bracts, rhachis green; flowers nearly an inch long, in rather distant clusters of three each; pedicels slender, a sixth to a fourth of an inch long, with one membranous, lanceolate white bract, and two minute ones at its base. *Perianth* pale green, tube very slender in the middle, gradually enlarged to the clavate base and infundibular limb, which latter is formed of six linear obtuse lobes as long as the tube. *Stamens* nearly as long as the perianth-lobes, anthers oblong. *Ovary* ovoid, style very slender, stigma minute. *Berries* globose, vermilion-red, one half to two-thirds of an inch in diameter.—*J. D. H.*

Fig. 1, Flower; 2 and 3, anthers; 4, pistil; 5, transverse section of ovary :—*All enlarged.*

M.S. del. J.N.Fitch lith.

L. Reeve & Cº London

Tab. 7585.

HACQUETIA Epipactis.

Native of South Europe and Siberia.

Nat. Ord. Umbelliferæ.—Tribe Saniculeæ.

Genus Hacquetia, *Neck.* (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 879.)

Hacquetia *Epipactis*; glaberrima, rhizomate præmorso, collo squamoso, foliis radicalibus longe petiolatis palmatim 3-partitis segmentis cuneiformibus serrulatis, lateralibus triangularibus rotundatisve inæquilateris sub-5-lobis, intermedio angustiore cuneiforme 3–5-lobo, lobis omnibus triangulari-ovatis, scapis 2–5 petiolo subæquilongis, capitulis parvis multifloris foliaceo-bracteatis, bracteis 5–10 oblongis stellatim patentibus grosse serratis, floribus aliis sessilibus hermaphroditis aliis pedicellatis masculis, calycis dentibus ovatis acuminatis, petalis erectis obovatis lacinula infracta elongata instructis, filamentis filiformibus petalis æquilongis, stylis (in fl. masc. imperfectis) elongatis, fructu ellipsoideo laevi bi-sulcato, carpophoro obscuro, pericarpio crassiusculo jugis inconspicuis, vittis intra juga 3–5.

H. Epipactis, *DC. Prodr.* vol. iv. p. 85. *Koch, Syn. Fl. Germ.* Ed. II. p. 280. *Bertol. Fl. Ital.* vol. iii. p. 118. *Parlat. Fl. Ital.* vol. viii. p. 222. *Reichb. Fl. Germ. Ic.* vol. xxi. t. 1842. *Bischoff in T. Nees, Gen. Fl. Germ, fasc.* xxvi. t. 3 (*Haquetia*). *Ces. Pass. Gib. Comp. Fl. Ital.* p. 575, t. 90, f. 4.

Dondia Epipactis, *Spreng. Umbell. Prodr.* p. 21, t. 1. *Lodd. Bot. Cab* t. 1832. *Gaud. Fl. Helvet.* vol. ii. p. 302, t. 3.

Dondisia Epipactis, *Reichb. in Moessl. Handb.* Ed. II. vol. i. p. 493.

Astrantia Epipactis, *Linn. fil. Suppl.* p. 177. *Scop. Fl. Carniol.* Ed. II. vol. i. p. 185, t. 6. *Jacq. Fl. Austriac.* vol. v. p. 32, App. t. 11.

Hacquetia, *Neck. Elem.* vol. i. p. 182.

Alpina Eleborine Saniculæ et Ellebori nigri facie, *Lobel, Stirp. Hist.* (1756) 378, *cum ic.; in Ic. Stirp.* (1591) p. 164 *iterata.*

A singular and rare little European Umbellifer, allied to *Astrantia* in habit, but differing in the terete fruit. It is a native of mountain regions in Northern Italy, and in Austria, from Silesia to Carinthia and Transylvania. It was named *Hacquetia* by Necker, in commemoration of the botanist, Balthasar Hacquet, author of "Plantæ Alpinæ Carniolicæ" (Vienna, 1782). The specific name of *Epipactis* owes its origin to Lobel, who first figured the plant, having likened it to *Helleborus niger*, the Eleborine of early herbalists, and ἐπιπάκτις of Dioscorides.

March 1st, 1898.

Hacquetia Epipactis has long been in cultivation in Kew, flowering in March, but of its introduction there is no record. It is not included in Aiton's "Hortus Kewensis" (1811), nor in more recent catalogues of garden plants.

Descr.—A perennial-rooted, quite glabrous, scapigerous herb. *Rootstock* elongate, præmorse, cylindric, rugose, copiously rooting; crown emitting leaves and scapes, the bases of which are clothed with short scales. *Leaves* on slender, often red petioles, three to six inches long, palmately tripartite, circular in outline, and two to four inches in diameter, bright green; segments shortly lobed and sharply serrulate, lateral orbicular, subflabellately triangular, unequally five- or more-lobed, formed of two connate segment; mid-segments much narrower, cuneiform three to five-lobed. *Scapes* two or more, angular, about as long and slender as the petioles. *Umbels* one to two inches in diameter, of a small group of yellow flowers, surrounded by an involucre of five to ten stellately spreading, oblong, strongly serrate, green, herbaceous bracts. *Flowers* minute, crowded on a small receptacle, pedicelled males and sessile hermaphrodite intermixed. *Calyx-teeth* acuminate. *Petals* erect, oblong, inflected for two-thirds of their length. *Stamens* about as long as the petals. *Fruit* nearly terete, grooved at the commissure; carpels with five low ridges, each with a solitary canal. *Styles* long, slender, recurved.—*J. D. H.*

Fig. 1, Portion of umbel; 2, flower; 3, petal; 4, fruit; 5, mericarp seen from the ventral face; 6, transverse section of mericarp:—*All enlarged.*

M S. del. J.N. Fitch lith

L Reeve & Cº London

Tab. 7586.

EPIDENDRUM xanthinum.

Native of Brazil.

Nat. Ord. Orchideæ.—Tribe Epidendreæ.

Genus Epidendrum, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 528.)

Epidendrum (Euepidendrum) *xanthinum*; caulibus cæspitosis elongatis gracilibus polyphyllis, foliis distichis 3–4-pollicaribus lineari-oblongis obtusis v. apice obtuse 2-dentatis carnosis, pedunculo caule continuo et æquilongo gracili decurvo per totam longitudinem vaginato apice multifloro, floribus xanthinis in racemum multiflorum congestis, bracteis subulatis persistentibus, sepalis petalisque consimilibus patentibus oblongo-lanceolatis acutis, labello usque ad apicem columnæ adnato 3-lobo, lobis subæqualibus patentibus fere ad medium laceratis, lateralibus quadratis, terminale subflabelliforme 2-fido, disco basi callo lato depresso 4-lobo et alis 2 parvis carnosulis instructo, columna aurantiaca, clinandrio parvo marginibus serratis, anthera ovoidea rostrata.

E. xanthinum, *Lindl. in Bot. Reg.* 1844, *Misc.* p. 18; *Fol. Orchid. Epiden.*? No. 229. *Walp. Ann.* vol. vi. p. 395. *Veitch. Man. Orchid.* Pars. vi. p. 127, *cum Ic.*

E. ellipticum, β flavum, *Lindl. in Ann. Nat. Hist.* vol. iv. (1840) p. 382.

Epidendrum xanthinum was discovered by Von Martius on the Sierra del Frio, in the province of Minas Geraes. It was afterwards collected in the same province by Burchell, and more recently (in 1840) by Gardner, who had previously (1837) found it in the Organ Mountains, near Rio de Janeiro.

According to Reichenbach in "Walper's Annales," it was cultivated in Loddiges' Nurseries, having been brought from Caraccas by Linden, but this is no doubt an error. It belongs to Lindley's section *Euepidendrum*, characterized by long, leafy stems, without pseudobulbs or spathe. It has long been in cultivation in the Royal Gardens, Kew, where it forms a bamboo-like tuft, in the cool Orchid House, flowering freely in spring.

Descr.—*Stems* tufted, one and a half to three feet high, as thick as a goose-quill, sub-erect, except when flowering, leafy throughout, greenish brown. *Leaves* distichous, uniform, three to four inches long, spreading, linear-oblong, obtuse, or tip minutely two-toothed, thickly coriaceous,

bright green above, paler and keeled beneath with a few faint nerves parallel to the keel. *Peduncle* continuous with the stem, and nearly as long, decurved, with the flowering tip ascending, clothed with rather tumid, pale purple and green, appressed, narrowly oblong sheaths one to one and a half inches long; upper part covered with subulate, suberect flowerless bracts, a quarter to half an inch long. *Racemes* sub-capitate, two inches in diameter, of very many, densely crowded, golden-yellow flowers three-quarters of an inch in diameter. *Sepals* narrowly oblong, sub-acute. *Petals* as long, sub-rhomboidly obovate, acute. *Lip* adnate to the column throughout the length of the latter; lobes spreading, sub-pectinately lacerate nearly to the middle into subulate lobes; side-lobes sub-quadrate, terminal broadly fan-shaped, two-cleft, disk with a broad, depressed four-lobed callus, and two small lobulate wings adnate to the bases of the side-lobes. *Column* orange-yellow; clinandrium small, with erose margins, anther very small, turgidly ovate, acuminate.—*J. D. H.*

Fig. 1, Sepal; 2, lip and column; 3, anther; 4 and 5, pollinia:—*all enlarged*; 6, plant, *reduced*.

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Tab. 7587-8.

ALLIUM Schuberti.

Native of Western Asia.

Nat. Ord. Liliaceæ.—Tribe Allieæ.

Genus Allium, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 802.)

Allium (Molium) *Schuberti*; bulbo crasso ovoideo v. subgloboso, foliis radicalibus pedalibus 2-poll. latis patentibus late lorato-lanceolatis planis plus minus undulatis marginibus scaberulis, scapo foliis breviore terite crasso nudo, spatha brevi 2–3-valvi, umbella amplissima globosa 50–200-flora saepius polygama, pedicellis rigidis flores multoties longioribus valde inæqualibus longioribus sterilibus 6–10-poll. longis, brevioribus 2–4-poll. longis omnibus apicem versus sensim incrassatis, floribus ⅔ poll. expansis roseis, segmentis ima basi connatis lanceolatis acutis stamina fere duplo superantibus patulis post anthesin suberectis, filamentis basi connatis subulatis rubris, antheris oblongis stramineis, ovario obovoideo 3-lobo, loculis 1–3-spermis, seminibus magnis trigonis atris opacis.

A. Schuberti, *Zuccarini in Abh. Bayer. Akad.* vol. iii. (1843) p. 234, t. 3, f. 1. *Kunth, Enum. Pl.* vol. iv. p. 689. *Regel, Monog. Allium*, p. 239; *All. Sp As. Centr.* pp. 21, 117. *Boiss. Fl. Orient.* vol. v. p. 279. *Wien. Ill. Gartenzeit.* 1895, p. 283, f. 26.

This very remarkable species of *Allium* has an extended geographical distribution in Western Asia, from Syria and Palestine to Mesopotamia, North Persia, Soongaria, and Western Turkestan. It belongs to a very small group of the genus, characterized by having more than two ovules in each cell of the ovary, to which the name of *Melanocrommyum* was given by its author (Webb et Berth. Phyt. Canar. iii. III. 347) from the fact of *A. nigrum*, L., being the species on which the section was founded. In the more generally adopted sectional grouping of *Allium*, *A. Schuberti* is referred to *Molium*, which includes those species of the huge genus in which the scape and base of the leaves are underground, the leaves approximately flat, the involucral bracts shorter than the pedicels, and the filaments usually simple. As a species *A. Schuberti* is unrivalled for the length of the pedicels, which, together with the colour of the flowers, and broad, long leaves, render it a very striking horticultural object. *A.*

Schuberti was discovered in the Plain of Jezreel, near Nazareth, by the traveller whose name it bears. Bulbs of it were received by the Royal Gardens, Kew, in 1896, from Messrs. Herb & Wulle, Nurserymen, Naples, which flowered in a sunny border in June, 1897.

Descr.—*Bulb* as large as the fist, or larger, subterranean, sub-globose or ovoid. *Leaves* a foot long by two inches broad and upwards, widely spreading, broadly oblong- or lorate-lanceolate, acuminate, flat, pale, bright green, striated. *Scape* shorter than the leaves, half an inch in diameter, terete, hollow, green. *Umbels* very large, globose, very many-fld. (up to 200); involucre of two or three bracts much shorter than the shorter pedicels. *Pedicels* very unequal, strict, rigid, thickening gradually upwards, the longer up to ten inches long, with sterile flowers; the shorter two to four inches long, with perfect flowers. *Perianth* about two-thirds of an inch broad; segments shortly united at the base, lanceolate, spreading, rigid and erect after flowering, rose-red. *Stamens* shorter than the perianth segments, filaments connate at the base, simple, subulate, red; anthers oblong, straw-coloured *Ovary* obovoid, 3-lobed, cells 3- or more-ovuled.—*J. D. H.*

Tab. 7587, a quadrant of the umbel of *A. Schuberti*, and fig. 1 ripe frui of *nat. size*

Tab. 7588; fig. 1, leaf, of *nat. size*; 2, reduced figure of whole plant: 3, flower; 4, pistil, *both enlarged.*

1
2
3
4

Tab. 7589.

MYOSOTIS DISSITIFLORA, *var.* Dyeræ.

Native of Switzerland?

Nat. Ord. Boragineæ.—Tribe Borageæ.

Genus Myosotis, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 858.)

Myosotis (Strophiostoma) *dissitiflora*; tota pilis gracilibus erectis patulisve obsita, rhizomate repente, foliis inferioribus petiolatis ellipticis spathulatisve acutis apiculatisve, caulinis sessilibus oblongis ovato-oblongisve, racemis elongatis laxifloris, pedicellis ascendentibus calyce multoties longioribus, calycis tubo pilis simplicibus erectis vestito, segmentis lanceolatis tubo triplo longioribus, corollae limbo patulo tubum longe excedente, ore piloso, antheris apiculatis, nuculis ovatis acutis dorso vix carinatis atris nitidis basi stipite albo crasso auctis.

M. dissitiflora, *Baker in Gard. Chron.* 1868, vol. i. p. 599; 1882, vol. i. p. 307, f. 44.

M. montana, *Hort.* (*non Besser*).

Var. Dyeræ, E. J. Lowe; elatior, floribus majoribus, corollæ limbo ½ poll. expans.

It is a singular fact, that nothing should be known of the history of the beautiful and popular *Myosotis dissitiflora*, than that it was brought from Switzerland more than thirty years ago, by the late Mr. Atkins of Painswick, so well known as the successful cultivator of Cyclamens. Mr. Atkins was, as I am informed by his friend Mr. Baker (the author of the species), a very intelligent botanist, possessing an extensive collection of rare and interesting plants that were ticketed with scrupulous accuracy; and it is much to be regretted that of the present plant in particular he could give no further account. What is to me still more surprising is, that though thirty years have elapsed since the publication of the species, during which interval *M. dissitiflora* has become one of the most common of garden plants, I can find no other reference to it in botanical or illustrated horticultural works than that which I have cited.

Though closely resembling in habit and general appearance the well-known *M. alpestris*, Schm., and *sylvatica*, Hoffm., *M. dissitiflora* belongs to a very different section of the genus from these, characterized by the nutlets being provided with a stout white stipes at the base,

derived from the receptacle. There are but few species of this section, all of which are Eastern European or Western Asiatic. Of this the only one that approaches *M. dissitiflora* is *M. amœna*, Rupr., a native of the Caucasus, which has similar rooting habit, foliage, indumentum and long pedicelled flowers, but these are very small, and in the absence of nutlets I am unable to say whether or not *M. amœna* (published by Boissier, "Fl. Orient.," iv. 241) ten years later than *dissitiflora*, may not be referable to this species. Should this prove to be the case, it would follow, that if brought from Switzerland, itmust have been from a garden.

The effect of long cultivation of *M. dissitiflora* has resulted in a very great enlargement of the whole plant, and of the corolla in particular, from about a quarter of an inch in the specimens preserved in the Kew Herbarium at the date of the publication of the species, to that shown in our plate. The latter represents a very luxuriant form, received at the Royal Gardens from E. J. Lowe, Esq., F.R.S., of Shirenewton Hall, Chepstow, who desires that it should commemorate the interest in horticulture taken by Mrs. Thiselton-Dyer, who, during her visits to the Alps, has contributed many rare and interesting plants to the Royal Gardens.

Descr.—A rather straggling branching biennial or perennial, sparsely clothed all over with soft, erect, or sub-erect hairs. Lower leaves petioled, one to two inches long, elliptic or spathulate, acute or apiculate, narrowed into a petiole an inch long or more; upper leaves sessile, oblong, or ovate-oblong. *Racemes* elongate, slender, laxly many-fld.; pedicels one half to one inch long, sub-erect. *Calyx* one-sixth of an inch long, tube short, and lanceolate segments clothed with erect straight hairs. *Corolla-tube* about as long as the calyx, mouth hairy within; limb one-fourth to upwards of half an inch broad, flat, lobes rounded, sky-blue, yellow at the mouth. *Anthers* with the connective terminating in a blunt process. Nutlets ovate, acute, dorsally convex, obscurely keeled, black, shining, provided at the base with a short, stout, white pedicel.—*J. D. H.*

Fig. 1, Calyx; 2, corolla laid open; 3, anther; 4, ovary; 5, 6, and 7, nutlets:—*All enlarged.*

M.S.del. J.N.Fitch lith.

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Tab. 7590.

CROCUS Malyi.

Native of Dalmatia.

Nat. Ord. Irideæ.—Tribe Moræeæ.

Genus Crocus, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 693.)

Crocus (Involucrati) *Malyi*; cormo brevi oblate pyriforme, tunicæ fibris filiformibus parallelis paulo infra apices reticulatis, vaginis spatha brevioribus, foliis glabris $\frac{1}{8}$–$\frac{1}{6}$-poll. latis florentibus tubum corollæ paullo superantibus maturis pedalibus, corollæ tubo 3-pollicari albo, fauce flavida intus pilis aurantiacis barbata, limbi segmentis $1\frac{1}{2}$-poll. longis albis, staminibus aurantiacis, antheris quam filamenta duplo longioribus, stylo aurantiaco ultra apices filamentorum 3-fido, lobis fissis, capsula $\frac{3}{4}$-poll. longa, seminibus rufo-brunneis.

C. Malyi, *Visiani, Fl. Dalmat. Suppl.* p. 181. *Maw in Gard. Chron.* 1881, vol. ii. p. 303; *in Journ. Linn. Soc.* vol. xix. (1882) pp. 364, 372; *Monog. Gen. Crocus*, p. 127, t. 18. *Baker, Handb. of Irid.* p. 83. *The Garden*, vol. xxi. p. 67.

A native of the Dalmatian mountains, Monte Vermay and Monte Orjen, above the Bocco de Cattaro, alt. 7260 ft., where it was discovered by Herr Maly more than half a century ago. It belongs, according to Maw's classification, to the spring-flowering section of the involucrate group of the genus, and to the sub-division having the fibres of the tunics of the corm free, or reticulating only in the upper part. In Mr. Baker's "Handbook," where the species are arranged under three sections, according as the style-arms are entire or more or less cleft, it is placed in the section *Holostigma*, in which these are entire; but I think it should preferably be placed under *Odontostigma*, in which they are variously cleft, though not cut into the capillary lobes of sect. *Schizostigma*. The general aspect of the plant is that of *C. vernus*, from which it differs in the bright golden throat of the perianth, and the parallel fibres of the corm tunic.

The Royal Gardens are indebted for corms of this species to Mr. Maw, who, when preparing his most beautiful Monograph of the genus (published in 1886) presented and planted with his own hand in the herbaceous grounds, a

very complete collection of *Croci*, many of them collected by himself during his various expeditions in the South of Europe and North of Africa in search of bulbous plants. It flowers annually in an open border in the month of March.

Descr.—*Corms* about three-fourths of an inch in diameter, broadly pear-shaped; fibres of coat filiform, parallel, reticulated below the summit. *Sheaths* below the leaves six or seven. *Leaves* four to five, about one-fifth of an inch broad, reaching to about the throat of the flower, fruiting fifteen inches long, keel about one-fourth the breadth of the blade, faces concave. *Proper spathes* one or two. *Flowering scape* about two inches long. *Perianth-tube* about three inches long, white or straw-coloured, throat yellow, with a fringe of golden hairs within at the base of the filaments; lobes one and a half inches long, white. *Stamens* orange-yellow, both filament and anthers, the latter more than twice as long as the anthers. *Style* orange-yellow, cleft from the tip down to the position of the tips of the anthers, into three irregularly toothed and cleft stigmas. *Capsule* three-fourths of an inch long. *Seeds* about one-sixth of an inch long, red-brown.—*J. D. H.*

Fig. 1, Section of leaf; 2, proper sheaths; 3 and 4, portions of perianth-throat and stamens; 5, top of style and stigmas; 6, stigma :—*All enlarged.*

M.S. del J.N. Fitch lith.

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Tab. 7591.

RHEUM Ribes.

Native of the mountains of Western Asia.

Nat. Ord. Polygonaceæ.—Tribe Rumiceæ.

Genus Rheum, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 100.)

Rheum *Ribes*; caule elato crasso inferne folioso superne aphyllo in paniculam amplam fastigiatim ramosam abeunte, foliis latis sub-breviter petiolatis amplis sub-cordato-orbiculatis reniformibusve sub-quinquenerviis supra laete viridibus inter nervos depressos tumidis, subtus pallidis inter nervos validos papilloso-scabros lacunosis, marginibus undulato-crispatis, petiolis laminæ sub-æquilongis rubris, paniculæ rubræ rachi ramisque erectis grosse papillosis, pedicellis filiformibus dense fasciculatis infra medium articulatis decurvis, floribus ¼ in. diam. pendulis, perianthii viridis segmentis oblongis obtusis, staminibus numerosis, antheris rubris, achenio fere pollicari ovato-cordato carnoso demum sanguineo, alis semine 2–3-plo angustioribus.

R. Ribes, *Linn. Sp. Pl.* p. 372 (1753). *Gronov. Fl. Orient.* p. 130. *Lamk. Encycl.* vol. vi. p. 195. *Desf. in Ann. Mus. Par.* vol. ii. (1803) p. 261, t. 49. *Ait. Hort. Kew.* ed. 1, vol. ii. p. 42. *Meisn. in DC. Prodr.* vol. xiv. p. 35. *Jaub. & Spach, Ill. Pl. Orient.* vol. v. t. 470. *Boiss. Fl. Orient.* vol. iv. p. 1003.

Lapathum orientale, &c., *Dillen. Hort. Eltham.* 191, t. 158, f. 192 (1732). *Pocock Fl. Orient.* 189, t. 84. *Breyne Ephem. Acad. Nat. Cur. Cent.* vii. p. 7.

Ribes arabum, *Rauw. in Aig. Beschr. Raiss.*, p. 266, 282 (1583). *Bauh. Pinax*, p. 455 (1623).

The plant here figured is a very old inhabitant of European Botanical Gardens, and, according to Dillenius, was cultivated by Sherard, presumably at Eltham, in 1724. It was discovered by Rauwolf, during his travels in the East in 1573-5, whose collections, now at Leyden, were published by Gronovius, under the title of "Flora Orientalis," in 1755, p. 49. Rauwolf published an Itinerary of his journey (which was translated into English by Staphorst in 1693), also a work on medicinal plants in 1583. He was a native of Augsburg, and died Physician of the Austrian Army in 1606.

Rheum Ribes is a native of the lofty mountains of Armenia, Kurdistan, Syria (the Lebanon), and Persia. Boissier adds Beluchistan, but that is an error, *R. spiciforme*, Royle, having been mistaken for it. "Rivas" is

the name given to it by the Arabs and Persians, by whom the petioles are eaten ; or "Ribes," according to Rauwolf, whence Linnæus' specific name. It has long been in cultivation in the Royal Gardens, Kew, flowering in May, and fruiting in July and August.

Descr.—*Rootstock* stout, branched. *Stem* three to five ft., erect. *Leaves* all from the lower part of the stem, ten to twelve inches broad, orbicular-cordate or reniform, five-nerved, bullate between the deeply sunk nerves and nervules above, dark green, glabrous, margins crisped and undulate, beneath pale green, lacunose between the very strong papillose nerves and nervules ; petiole one to two feet long, stout, bright red. *Panicle* two to three feet high, erect, rachis and branches papillose ; pedicels fascicled, about half an inch long, decurved, red ; fl. about one-third of an inch diam., pendulous ; perianth green, segments linear-oblong, obtuse. *Stamens* very many, much exceeding the perianth-segments, filaments very short, anthers linear, bright red. *Ovary* obconic, styles reflexed on the ovary. *Achene* nearly an inch long, oblong-cordate, blood-red, wings narrower than the nucleus.—*J. D. H.*

Fig. 1, Branch of flowering panicle ; 2, unexpanded flower ; 4, stamen ; 5, pistil ;—*all enlarged* ; 6, branches of fruiting panicle of *nat. size* ; 7, *reduced* view of whole plant.

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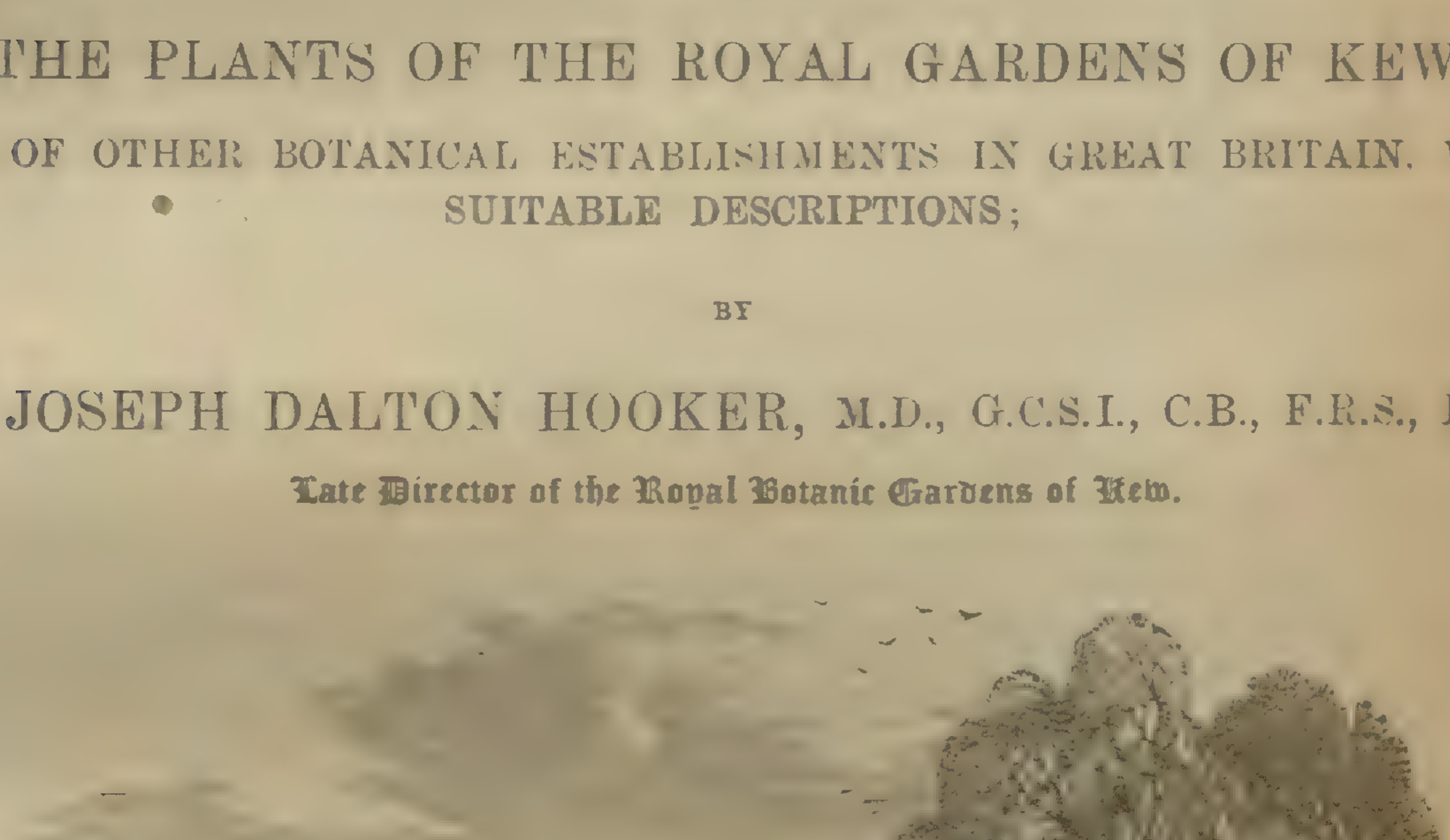

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Tab. 7592.

AMOMUM HEMISPHÆRICUM.

Native of Java.

Nat. Ord. Scitamineæ.—Tribe Zingibereæ.

Genus Amomum, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 644.)

Amomum (Nicolaia) *hemisphæricum*; caulibus cæspitosis, foliiferis elatis, foliis oblongo-lanceolatis glabris supra vaginam breviter petiolatis apice cuspidatis basi inæqualiter rotundatis facie viridibus dorso rubro-brunneis, ligula magna quadrata, pedunculo foliis rudimentariis oblongis adpressis viridibus vaginato, floribus in capitulum densum aggregatis, bracteis exterioribus magnis vacuis ovatis obtusis rubro-brunneo tinctis, interioribus linearibus viridibus flore æquilongis, calycis et corollæ lobis lanceolatis viridibus, labello lingulato emarginato petalis paulo longiore medio rubro-brunneo margine luteo, antheræ ecristatæ loculis discretis ciliatis, stigmate magno capitato.

Elettaria hemisphærica, *Blume Enum. Pl. Jav.* p. 51; *Miquel Fl. Ind. Bat.* vol. iii. p. 600.

Nicolaia hemisphærica, *Horan. Prodr. Monog. Scit.* p. 32.

Alpinia hemispherica, *D. Dietr. Syn. Pl.* vol. i. p. 13.

This plant is entirely new to cultivation in this country. *Nicolaia* was constituted as a genus, and named in honour of the late Emperor Nicholas of Russia, by Horaninow, who wrote a monograph of the *Scitamineæ* at St. Petersburgh in 1862. The only other species known in cultivation is the Mauritian *A. imperialis*, Horan., which is figured in the *Botanical Magazine*, under the name of *Alpinia? magnifica* on plate 3192. This is the finest of all the *Scitamineæ*, for the floral effect of the present plant is not nearly so decorative.

Roots of *A. hemisphærica* were received at the Royal Gardens, Kew, in 1893, from Mr. H. N. Ridley, M.A., Director of the Botanic Garden and Forest Department of the Straits Settlements, and flowered for the first time in the Tropical Water-lily House in June, 1897. As we possess no wild specimens in the Kew Herbarium, and the plant has not been figured before, we rely upon Mr. Ridley for the correctness of the name.

Descr.—*Stems* densely tufted. *Leafy stem* erect, ten or

twelve ft. high. *Leaves* distichous, shortly petioled above the sheathing base, oblong-lanceolate, a foot and a half long, three inches broad, cuspidate, unequally rounded at the base, glabrous, green on the upper surface, claret-brown beneath. *Peduncle* arising from the rootstock separately from the leafy stem, hidden by the adpressed oblong, pale green, obtuse sheath-leaves. *Flowers* very numerous, aggregated in a globose head; outer empty bracts large, ovate, obtuse, tinged with red-brown; inner linear, nearly as long as the flowers. Lobes of the *calyx* and *corolla* lanceolate, green. *Lip* lingulate, emarginate, a little protruded from the corolla, red-brown in the middle, bright yellow at the edge. *Anther* not distinctly crested; cells ciliated, not touching each other. *Ovary* 3-celled, with many ovules in each cell. *Style* reaching to the top of the anther; stigma large, capitate.—*J. G. Baker.*

Figs. 1 and 2, flowers; 3, anther and style; 4, back view of the same; 5, apex of style, with stigma: *all more or less enlarged*; 6, whole plant, ***much reduced.***

M.S del J.N Fitch lith.

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Tab. 7593.

STEPHANANDRA Tanakæ.

Native of Japan.

Nat. Ord. Rosaceæ.—Tribe Spiræeæ.

Genus Stephanandra, *Sieb. & Zucc.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 612.)

Stephanandra *Tanakæ*; suffrutex 3-pedalis, gracilis, cortice brunneo, foliis breve petiolatis triangulari-ovatis 3-lobis, lobis late ovatis acuminatis lobulatis serratisque lateralibus parvis, supra glaberrimis subtus secus nervos utrinque 7–9-rectos puberulis, stipulis ovatis acutis calloso-dentatis viridibus deciduis, floribus in paniculas terminales pendulas dispositis, bracteis ovatis acuminatis, bracteolis pedicellos æquantibus persistentibus, floribus parvis, calycis flavi lobis ovatis acutis pubescentibus, petalis calyci æquilongis ovato-oblongis albis, disco puberulo, staminibus 15–20, filamentis brevibus, ovario oblongo pubescente, stylo breviusculo, stigmate capitato, capsula tomentella crustacea disperma calyce fere immutato inclusa, seminibus ellipsoideis politis.

S. Tanakæ, *Franch. & Sav. Enum. Pl. Jap.* vol. ii. p. 332. *Maximov. Adnot. Spiræac.* 114. *Gartenfl.* 1896, t. 1431 (folia.).

Neillia Tanakæ, *Franch. & Sav. l. c.* vol. i. p. 121.

The genus *Stephanandra* consists of four species, three Japanese and a Chinese, and is very closely allied to the Himalayan and North American genus *Neillia*, Don., differing in the monocarpellary ovary, with two pendulous ovules, and a capsule which ruptures at the base, and contains only two seeds. Maximovicz describes the style as at length lateral, but it is terminal in *S. Tanakæ*.

Stephanandra Tanakæ is a native of the Hakone Mts., in the Sagami Province of Japan, and was first collected in the flanks of Fudzi-yama, where it forms a graceful bush. Seeds of it were sent to the Royal Gardens, Kew, by the Botanical Garden of the Imperial University of Tokio in 1893. The accompanying figure was made from a plant which flowered in June, 1897, in the Arboretum.

Descr.—A slender, nearly glabrous branching undershrub, about three feet high; bark of branches brown. *Leaves* two inches long and broad, alternate, triangular-ovate, 3-lobed, membranous, bright green, colouring golden-yellow in autumn; lobes broadly ovate, acuminate,

lobulate and serrate, seven to nine-nerved, the lateral smaller than the median, quite glabrous above, puberulous on the nerves beneath; petiole short; stipules as long as the petiole, ovate, acute, green, deciduous, more or less toothed, the teeth callus-pointed. *Flowers* very small, about one-sixth of an inch broad, in terminal, pendulous panicles three to four inches long, with very slender rhachis and branches; bracts ovate, acuminate, bracteoles as long as the pedicels, persistent. *Calyx* yellow, lobes ovate, acute, pubescent. *Petals* as long as the calyx-lobes, ovate-oblong, spreading, white, puberulous. *Stamens* 15–20, inserted in the margin of the puberulous disk, filaments short. *Ovary* oblong, pubescent, style short, terminal, stigma capitate. *Capsule* enclosed in the dried, unchanged calyx, oblong, crustaceous, dehiscing at the base irregularly, 2-seeded. *Seeds* sub-reniformly rounded, compressed, shining, testa crustaceous.—*J. D. H.*

Fig. 1, Portion of panicle; 2, flower laid open; 3, fruit; 4, seed:—*All enlarged.*

M.S. del, J.N. Fitch lith.

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Tab. 7594.

SYMPHYANDRA Wanneri.

Native of Transylvania.

Nat. Ord. Campanulaceæ.—Tribe Campanuleæ.

Genus Symphyandra, *A.DC.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 563.)

Symphyandra (Anotocalyx) *Wanneri*; radice præmorsa, caule simplici v. superne ramoso erecto 2–3-pedali folioso pubescente-piloso, foliis radicalibus et inferioribus caulinis oblanceolatis acutis acute inæqualiter dentatis utrinque pilosulis basi in petiolum latum angustatis, caulinis angustioribus sessilibus, floribus axillaribus et in racemum terminalem foliosum dispositis longe pedicellatis cernuis, pedicellis 1–3-pollicaribus ascendentibus apice decurvis, sepalis pollicaribus ovato-lanceolatis acuminatis integerrimis v. dentatis nervosis, corolla calyce ½–2-plo longiore pilosula violacea, lobis brevibus latioribus quam longis, filamentis basi ciliatis, antheris anguste linearibus, stylis brevibus, stigmatibus revolutis.

S. Wanneri, *Heuff. in Flora*, vol. xxxvii. (1854) p. 292.

Campanula Wanneri, *Rochel, Pl. Banat. Rar* p. 41, t. 5, f. 12.

C. heterophylla, *Baumg. En. Stirp. Transylv.* vol. iii. Suppl. p. 342.

The genus *Symphyandra* is distinguished from *Campanula* by the sole character of the anthers cohering in a tube. Like *Campanula*, it is divisible into two sections, according to whether the sinus between the calyx-lobes is naked, or furnished with a reflexed appendage. It may hence well be doubted whether it should not merge into the greater genus. Seven species are described, all oriental, inhabiting the mountain regions which extend from Transylvania to the Caucasus, with one a native of Crete. Of these *S. Hofmanni* alone has been figured in this magazine (t. 7298).

S. Wanneri has been in cultivation in the Royal Gardens, as a biennial, for a good many years, but the record of its introduction is lost. It flowers in June, in the open border. It was named by Rochel in honour of Herr Wanner, Conservator of the Imperial forests of the Banat, in which region the plant was discovered. The corolla in native specimens varies greatly in length, being sometimes very little longer than the calyx-segments.

Descr.—An erect biennial, two to three feet high, sparsely hairy all over. *Stem* stout, pale reddish brown. *Lower*

leaves three to four inches long, crowded, spreading, oblanceolate, narrowed into a margined petiole, acute, coarsely serrate, pale green, upper sessile, shorter and narrower, midrib red-brown. *Inflorescence* a leafy, many-fld. terminal raceme; peduncles axillary, two inches long, ascending, slender, one- to two-flowered, and bearing one or two small, erect, narrow leaves. *Flowers* pendulous, one and a half to two inches long. *Calyx-tube* hemispheric, segments nearly an inch long, lanceolate, acuminate, entire or serrate, green and brown. *Corolla* campanulate, an inch broad at the mouth, violet-blue, pale towards the base; lobes much broader than long, broadly triangular, slightly recurved. *Filaments* with broadly dilated ciliate bases; anthers narrowly linear. *Ovary* cylindric, glabrous; style short, three-cleft, stigmas short, revolute.—*J. D. H.*

Fig. 1, Stamens; 3, pistil:—*Both enlarged.*

M.S. del. J.N. Fitch lith.

Vincent Brooks, Day & Son. Lt.

Tab. 7595.

KALANCHOE flammea.

Native of Somaliland.

Nat. Ord. Crassulaceæ.

Genus Kalanchoe, *Adans.* (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 659.)

Kalanchoe *flammea*; perennis, pedalis, ramosa, foliosa, glaberrima, foliis obovato-oblongis obovatisve in petiolum crassum angustatis crasse carnosis apice rotundatis integerrimis v. obscure repando-crenatis pallide viridibus vix glaucis, cymis corymbosis densifloris 4–5-poll. longis et latis, pedunculo 4–5-pollicari, ramis primariis 2-pollicaribus, pedicellis $\frac{1}{6}$–$\frac{1}{4}$ pollicaribus, bracteis parvis linearibus obtusiusculis caducis, calycis 4-partiti segmentis $\frac{1}{6}$ poll. longis lineari-lanceolatis subacutis basi liberis, corollæ tubo calyce duplo longiore 4-gono flavido, limbi $\frac{3}{4}$ poll. lati lobis late ovatis acutis rubro-aurantiacis, glandulis disci linearibus $\frac{1}{12}$ poll. longis, carpellis $\frac{1}{4}$-poll. longis, stylis brevibus.

K. flammea, *Stapf in Kew Bulletin*, 1897, p. 266.

The genus *Kalanchoe* numbers about fifty known species, chiefly African, with a few Indian, and will probably be largely increased, now that the collection of plants in tropical Africa is being zealously prosecuted. Only three species have been hitherto figured in this work, namely, *K. crenata*, DC. (*Cotyledon crenata*, tab. 1436); *K. marmorata*, t. 7333, and *K. grandiflora*, t. 5460, none of which can compare with *K. flammea*, whether in the colour of the flower, or in the length of time that the plant continues in flower (two months), on which account it proves to be a notable addition to the Succulent House flora.

Seeds of *K. flammea*, collected in Somaliland by Mrs. Lort Phillips and Miss Edith Cole, were presented to the Royal Gardens, Kew, in May, 1895, the plants raised from which flowered in a sunny green-house in July, 1897, and ripened their seeds.

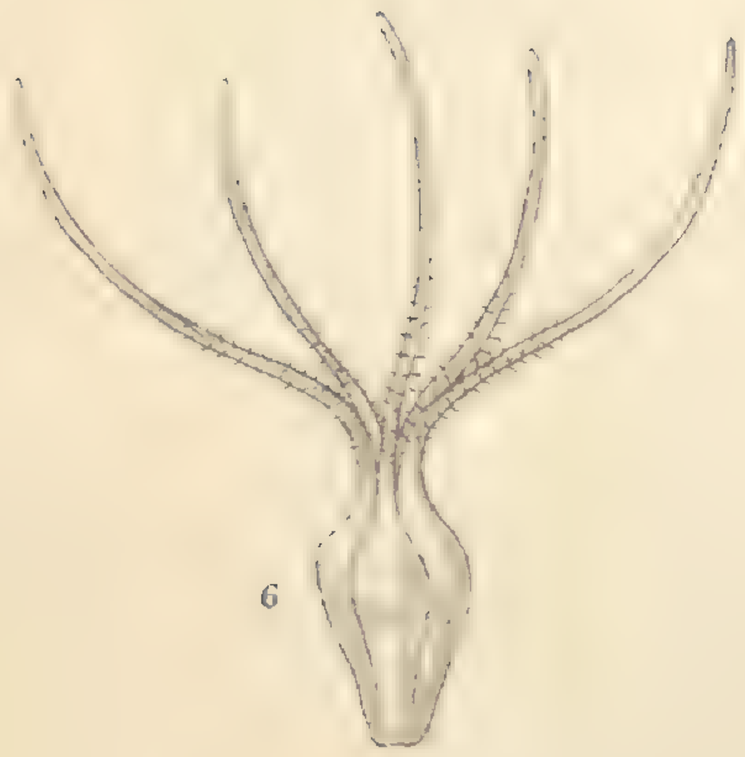
Descr.—Whole plant a foot high, stout, erect, branching, pale green, but hardly glaucous. *Leaves* two to three and a half inches long, including the stout petiole, obovate, or obovate-oblong, thickly fleshy, quite entire, or obscurely crenulate. *Cyme* corymbiform, four to five inches long and broad; peduncle four to five inches long, strict, erect,

primary branches one to two inches long, many-fld.; bracts small, linear, obtuse, caducous; pedicel one-sixth to one-fourth of an inch long. *Calyx* one-sixth of an inch long, segments linear, sub-acute. *Corolla-tube* two to three times as long as the calyx, sub-tetragonous, pale yellow; limb three-fourths of an inch broad, lobes broadly triangular-ovate, sub-acute, bright orange-red; glands of the disk linear, erect. *Stamens* very small, biseriate. *Styles* short. —*J. D. H.*

Fig. 1, Calyx, disk-glands, and ovary; 2, corolla laid open; 3, stamen :—*All enlarged.*

1

3



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Tab. 7596.

ARMERIA cæspitosa.

Native of Spain.

Nat. Ord. Plumbagineæ.—Tribe Staticeæ.

Genus Armeria, *Willd.*; (*Benth. & Hook. f. Gen. Plant* vol. ii. p. 626.)

Armeria *cæspitosa*; radice multicipite, caulibus brevissimis in pulvinos densissimos confertis, foliis brevibus patenti-recurvis inter se conformibus, fere acicularibus basi dilatatis albo-mucronatis supra planis subtus obscure carinatis rigidis læte viridibus, marginibus scaberulis, scapo brevi glabro v. puberulo, involucri bracteis floribus brevioribus scariosis brunneis, extimis oblongis obtusis concavis mucronatis 1-nerviis, interioribus angustioribus acuminatis, bracteis floralibus late obovatis obovato-oblongisve membranaceis hyalinis calyce longioribus multotiesque latioribus, floribus breviter pedicellatis, calycis tubo valide costato, costis intervallis angustioribus villosis in aristas scabridas bracteolas excedentes productis, foveolis basi calycis 0 nisi rimis angustis inter baseos costarum, calycis limbo hyalino truncato undulato, petalis obcordatis pallide roseis, stylis infra medium pilosis.

A. cæspitosa, *Boiss. in DC. Prodr.* vol. xii. p. 679.

A. juniperifolia, *Willd. ex Hoffm. & Link, Fl. Portug.* p. 442.

A. humilis, *Link in Schrad. Journ.* p. 61.

Statice cæspitosa, *Ortega in Quer, Fl. Espan.* vol. vi. p. 334, t. 15, f. 1. *Car. Ic.* vol. i. p. 38 (*non Poiret*).

S. juniperifolia, *Vahl, Symb. fasc.* i. p. 25.

Armeria cæspitosa is a native of the lofty mountains of Central Spain, the Sierra de Guadarrama, and of the Sierra de Estrella in Portugal. It was first described in 1762 by Ortega, in the "Flora Espanola," of Martinez Quer, a remarkable work for its day.

The plant here figured was raised from seeds received at the Royal Gardens, Kew, in 1893, from the Botanic Gardens of Madrid. It flowered in the end of April, 1897.

Descr.—A densely tufted, dwarf perennial, with many very short branches from the root, clothed with spreading and recurved leaves, and bearing almost sessile heads of pale rose-coloured flowers. *Leaves* one half to two-thirds of an inch long, acicular from a dilated membranous base, bright green, ending in a pungent white tip, upper surface convex, under obtusely keeled, margins scabrid. *Flowers* sub-sessile, in shortly peduncled involucres, forming heads

an inch in diameter; peduncle slender. *Invol. bracts* much shorter than the flowers, brown, scarious, outer oblong, concave, 1-nerved, nerve ending in a mucro, inner narrower, acuminate; floral bracts (or bracteoles) much larger than the involucral, broadly obovate-oblong, membranous, hyaline, with a thick midrib from the base to the middle, or higher. *Perianth* half an inch broad. *Calyx* campanulate, about one-quarter of an inch long, scarious, glabrous, except five narrow pubescent ribs ending in short scabrid awns, mouth truncate, undulate. *Petals* obovate-spathulate, 2-lobed, pale rose-coloured. *Stamens* with erect, subulate, glabrous filaments, and oblong, pale anthers. *Ovary* obconic, deeply 2–5-lobed, glabrous, styles very slender, spreading and ascending, hairy below the middle. *Utricle* as long as the bracts.—*J. D. H.*

Fig. 1, Leaf; 2 and 3, outer bracts; 4, inner bract and calyx; 5, flower; 6, pistil:—***All enlarged.***

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Tab. 7597.

CRINUM Woodrowi.

Native of Central India.

Nat. Ord. Amaryllideæ.—Tribe Amaryllæ.

Genus Crinum, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 726.)

Crinum (Platyaster) *Woodrowi*; bulbo globoso magno collo haud producto, tunicis exterioribus brunneis, foliis paucis lingulatis obtusis viridibus glabris, pedunculo compresso foliis æquilongo, umbellis 6–7-floris, pedicellis productis, spathæ valvis 2 ovatis, perianthii tubo cylindrico viridulo limbi segmentis albis lanceolatis patulis tubo æquilongis, filamentis rubellis perianthii segmentis duplo brevioribus, stylo stamina superante.

Several bulbs of this fine new *Crinum* were sent to the Royal Gardens, Kew, in January, 1897, by Mr. G. M. Woodrow, formerly of Kew, now lecturer on botany in the College of Science at Poona. They were supposed to belong to *C. brachynema*, Herb. (Bot. Mag. t. 5937) a very rare endemic Central Indian species, which differs from all the other members of the genus by its very short stamens, but when they flowered in July they proved to be totally different. The present plant belongs to the section *Platyaster*, and is nearly allied to the Socotran *C. Balfourii*, Baker (Bot. Mag. t. 6570), and the Bornean *C. Northianum*, Baker, and of the Indian species to *C. amœnum*, Roxb., and *C. pratense*, Herb. At Kew it has flowered freely under ordinary stove treatment.

Descr.—*Bulb* globose, four inches in diameter, without any produced neck; outer tunics brown, membranous. *Leaves* few, contemporary with the flowers, lingulate, obtuse, glabrous, bright green, a foot long, three or four inches broad, not ciliated on the margin. *Peduncle* arising from the bulb outside the tuft of the leaves, stout, compressed, a foot long. *Umbel* six- or seven-flowered; pedicels about an inch long; spathe-valves two, opposite, ovate. *Perianth-tube* cylindrical, three inches or three inches and a half long; segments of the limb lanceolate,

white, spreading equally, as long as the tube. *Filaments* bright red, half as long as the perianth-segments; anthers linear, a third of an inch long. *Style* much overtopping the anthers.—*J. G. Baker.*

Fig. 1, Front view of anther; 2, back view of anther; 3, apex of style: *all enlarged*; 4, whole plant, *much reduced.*

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Tab. 7598.

MORISIA hypogæa.

Native of Corsica and Sardinia.

Nat. Ord. Cruciferæ.—Tribe Cakilineæ.

Genus Morisia, *J. Gay*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 100.)

Morisia *hypogæa*; herba depressa, scapigera, hispidula v. glabrata, radice crassa, foliis sessilibus rosulatis lineari-oblongis pinnatifidis, lobis oblongis obtusis integerrimis, scapis foliis brevioribus gracilibus unifloris, sepalis lineari-oblongis erectis obtusis basi æqualiter sub-saccatis, petalis obovato-spathulatis aureis, filamentis edentulis, glandulis hypogynis 2 v. 4, siliqua terra abscondita 2-articulata, articulis secus longitudinem 2-locularibus, inferiore majore oblongo v turgido bivalvi valvis hemisphericis tarde deciduis, seminibus 2-seriatis, superiore minore indehiscente rostrato, loculis 1-spermis v. aspermis, stylo breviusculo tereti, stigmate capitato, seminibus late oblongis, cotyledonibus concavis v. fere conduplicatis.

M. hypogæa, *J. Gay in Colla Hort. Rip. App.* vol. iv. p. 50. *Moris, Fl. Sard.* vol. i. p. 105, t. 7. *Gard. Chron.* 1890, vol. ii. p. 503, fig.

M. acaulis, *Gay in Gazette de Turin*, 1829, p. 24 (fid. mss. J. Gay) et cf. *Colla, in Antologia*, vol. xxxiv. (Apr., 1829) p. 158, *ex Bull. Ferussac.* vol. xxi. (1829) p. 459.

Erucaria hypogæa, *Viv. Fl. Cors. Prodr.* p. 11, App. p. 3, *cum ic.* *Moris, Stirp. Sard. Elench.* fasc. i. p. 4.

Rapistrum hypogæum, *Duby, Bot. Gall.* vol. i. p. 54.

Sisymbrium acaule, *Sieb. Herb. Cors.* (1822).

S. monanthos, *Viv. Fl. Lyb. Spec.* p. 68.

Matricaria acaule, *Scheele in Flora*, vol. i. (1843) p. 314.

Morisea, *seu* Morisina, *DC. Prodr.* vol. vi. p. 90, *in nota.*

Morisia hypogæa is a singular little monotypic Crucifer, the position of which in the family is rather obscure. I placed it in the Tribe *Cakilineæ* in the "Genera Plantarum," which brings it near to *Erucaria*, a genus in which it was placed by Viviani, and by Moris, the latter of which authors accepted subsequently J. Gay's constituting of it a distinct genus, bearing the name of the excellent author of the "Flora Sardoa." It differs in the singular habit of decurving the scape after flowering, and burying the ripening fruit in the soil, recalling the two other crucifers *Cardamine chenopodifolia*, Pers., of Brasil, and *Geococcus*

pusillus, Drumm., of W. Australia; as also of the two Leguminous plants, *Arachis hypogæa*, L., and *Voandzeia subterranea*, Thou.

The rocks and sandy shores of Sardinia and Corsica are the only known habitats for *Morisia*. At the Royal Gardens, Kew, it flowers annually in the Rockery in March, and earlier in the Alpine House.

Descr.—A procumbent, sparsely hispid, depressed, perennial-rooted herb, stemless, or with one or two short stems springing from the crown, but not otherwise interfering with the habit of the plant. *Leaves* very many, spreading horizontally from the root, two to three inches long by about one half inch broad, linear, pinnatifid or pinnatisect, bright green; segments ovate or oblong, obtuse or apiculate, quite entire, sinus rounded. *Flowers* very numerous, solitary, or slender, scapes shorter than the leaves, about three-fourths of an inch broad, golden-yellow. *Sepals* subequal, linear-oblong, obtuse, scarcely saccate at the base. *Petals* spathulate. *Filaments* slender, with two long glands at the base of the shorter pair, and sometimes two smaller between the longer pairs. *Ovary* terete, constricted above the middle, of two joints, each two-celled, lower joints with the cells many-ovuled, upper with the cells empty, or 1-ovuled; style short, stigma capitate. *Fruit* half an inch long or more, ripening underground. *Seeds* broadly oblong, cotyledons concave, radicle incumbent.—*J. D. H.*

Fig. 1, Portion of leaf; 2, flower with the petals removed; 3, stamens, glands, and pistil; 4, vertical, and 5, transverse section of ovary; 6 and 7, fruit; 8, seed, from lower joint of fruit; 9, transverse section of embryo of do.; 10, portion of upper joint with 2 seeds; 11, transverse section of embryo from do.:—***All enlarged*, except 6, which is of *nat. size*.**

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Tab. 7599.

CELASTRUS articulatus.

Native of Eastern Asia.

Nat. Ord. Celastrineæ.—Tribe Celastreæ.

Genus Celastrus, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. i p. 364.)

Celastrus *articulatus*; frutex 10–15-pedalis, ramosus, glaberrimus, caule volubili, cortice pallido verruculoso, ramulis rectis v. scandentibus, foliis petiolatis 3–5-poll. longis oblongis ovatis orbicularibusve obtuse acutatis crenato-serratis viridibus subtus pallidis, stipulis filamentosis, floribus in cymas axillares subsessiles paucifloras dispositis breviter pedicellatis, calycis campanulati tubo brevi, lobis brevibus subrotundis, petalis linearioblongis obtusis recurvis viridibus, filamentis subulatis erectis disco 5-lobo insertis. ovario ovoideo in stylum columnarem producto, stigmate 3-lobo, lobis majusculis recurvis, capsulis globosis, valvis intus flavidis demum reflexis semina arillo coccineo induta nudantibus.

C. articulatus. *Thunb. Fl. Jap.* p. 97. *DC. Prodr.* vol. ii. p. 7. *Franch. et Sav. En. Pl. Jap.* vol. i. p. 80; *Pl. David.* p. 70. *Bunge En. Pl. Chin. bor.* p. 97. *Miquel, Prolus, Fl. Jap.* p. 17. *Maxim. Mel. Biol.* pars. xi. p. 200. *Forbes & Hemsl. in Journ. Linn. Soc.* vol. xxiii. p. 122. *Sargent, Gard. & Forest*, 1890, p. 551, *et ic.* p. 550. *Gard. Chron.* 1898, vol. i. p. 28, f. 11. ***Phonyo Zouphon*, vol. xxx. fol. 2, *recto.***

C. auriculatus, *Vitm. Summa*, vol. ii. p. 31.

C. orbiculatus, *Lam. Ill.* n. 2700.

C. punctatus, *Thunb. Fl. Jap.* p. 97. DC. l. c. p. 6.

A strong, rapid-growing, rambling and twining, deciduous shrub, well fitted according to Professor Sargent, for clothing ruins, walls ten to fifteen feet high, and waste stony places, having the further advantage of thriving close to the sea, where it is uninjured by the salt spray. It is a plant of very wide distribution in far Eastern Asia, from the Island of Saghalin, Manchuria, Corea, and Japan, to the Loo-choo Islands and Formosa; and in China proper, in hilly districts of the interior, from the North of Peking, to Ichang on the Yang-tse-Kiang, and to Amoy on the coast.

Seeds of *C. articulatus* were received by the Royal Gardens, Kew, from Professor Sargent, Arnold Arboretum, in 1891, plants raised from which grew vigorously,

flowered in June, 1897, and fruited in the following November. Professor Sargent received the seeds from which his plants were raised from Mr. S. H. Parsons of Flushing (New York). He had previously obtained some from Dr. Bretschneider, collected in the vicinity of Peking.

Descr.—A rambling shrub, attaining fifteen feet in height, copiously branched, quite glabrous all over; bark brown, warted; branches straight or twining; branchlets green. *Leaves* petioled, three to five inches long, oblong, oval, obovate or suborbicular, acute, tip obtuse, crenate-serrate, base cuneate, nerves six to eight pairs; petiole a quarter to half an inch long; stipules a tuft of a few filaments. *Flowers* in short, shortly peduncled, axillary, few-fld. cymes, about one-sixth of an inch broad, green, with yellow anthers. *Calyx* small, campanulate, lobes five, short, rounded. *Petals* much longer than the calyx lobes, linear-oblong, obtuse, recurved. *Stamens* 5, filaments subulate, seated in the margin of a five-lobed disk, anthers short. *Ovary* ovoid, glabrous, narrowed into a columnar style, with three broad, recurved stigmatic lobes. *Capsule* pisiform, brown, tipped by the persistent style, three-valved, valves golden-yellow within, at length reflexed, exposing the seeds enveloped in a shining, scarlet aril.—*J. D. H.*

Fig. 1, Portion of branch with stipule, petiole, and base of peduncle of cyme; 2, flowers; 3, section of base of calyx, showing ovary, disk and stamens; 4, stamen; 5, contents of a capsule, after the fall of the valves, and the drying up of the fleshy aril:—*All enlarged.*

M.S. del. J.N Fitch lith.

L Reeve & C.º London.

Tab. 7600.

PHILADELPHUS mexicanus.

Native of Mexico and Guatemala.

Nat. Ord. Saxifrageæ.—Tribe Hydrangeæ.

Genus Philadelphus, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 642.)

Philadelphus *mexicanus*; frutex gracilis, ramulis foliis subtus calycibusque plus minusve hirtellis, foliis $1\frac{1}{2}$–2-pollicaribus ovatis acuminatis 3-nerviis remote dentatis, floribus ad apices ramulorum solitariis breviter pedicellatis amplis 1–$1\frac{3}{4}$-poll. latis pallide sulphureis suaveolentibus, calycis segmentis ovato-lanceolatis acuminatis remote dentatis tubo multo longioribus, stylo columnari ad medium 4-fido, stigmatibus oblongis obtusis.

P. mexicanus, *Schlecht. in Linnæa*, vol. xiii. (1839) p. 418. *Walp. Rep.* vol. ii. p. 151. *Lindl. Bot. Reg.* vol. xxviii. t. 38*. *Decaisne in Rev. Hortic.* Ser. III. vol. i. (1852) p. 381, fig. 20. *Wittmack in Berl. Gartenz.* 1883, p. 528, fig. 91. *Gard. Chron.* 1883, vol. i. p. 753. *Hemsl. Biol. Centr. Amer.* vol. i. p. 384.

Except by the scented flowers I fail to find a character whereby *P. mexicanus* is distinguishable from solitary-flowered specimens of the common *P. grandiflorus*, Willd. (Bot. Reg. t. 570), a native of the Eastern United States, from Virginia southwards. It was introduced from Mexico by Hartweg, into the gardens of the Royal Horticultural Society about the year 1835. From the plants there raised Lindley (in 1842) figured it, but his figure is from a plant only two feet high, with much smaller leaves and flowers than those of Hartweg's dried native specimen, or than our plant shows. It appears to be common from north to south in its native country, growing wild in hedges at elevations of 6–8000 ft., in Oaxaca, and about the city of Mexico. There are specimens in Herb. Kew, collected in Guatemala, dep. Quiché, alt. 6000 ft., by J. Donnel Smith, Esq., and others. Schlechtendal considered it to be the *Acuiloth*, or climbing aquatic of Hernandez, who figured it, and speaks of it as an inhabitant of wet places, creeping on the ground, or scrambling up trees. Hernandez (Nov. Plant. Mex., &c., lib. iv. cap. x. p. 107) compares the habits of the plant with the musk-rose, and says that a sweet and agreeable essence is distilled from its flowers. Schlechtendal is no

doubt right in this identification, but Hernandez's comparison of the habits of the plant to the musk-rose is inexplicable. At the Royal Gardens, Kew, *P. mexicanus* is trained on the south wall of the Orchid House, where it flowers freely annually in June, but it is not hardy.

Descr.—A more or less sparsely, hispidulous, or nearly glabrous shrub, with spreading or drooping branches, covered with pale, red-brown bark. *Leaves* one to two and a half inches long, shortly petioled, ovate, acuminate, 3-nerved, sparingly serrate or toothed, bright green above, pale beneath; petiole one-tenth to one-sixth of an inch long. *Flowers* solitary, subsessile on the ends of the branchlets, nearly two inches in diameter, strongly sweet-smelling, pedicel very stout. *Calyx-tube* hairy, turbinate, segments broadly ovate, acuminate, one half to two-thirds of an inch long, entire, or sparingly toothed. *Petals* orbicular, white, suffused with yellow. *Stamens* very numerous, filaments glabrous. *Style* columnar, quadrifid, stigmas oblong, obtuse.—*J. D. H.*

Fig. 1 and 2, stamens; 3, section through ovary :—*All enlarged.*

M.S. del, J.N. Fitch lith.

Vincent Brooks, Day & Son Imp

Tab. 7601.

ORCHIS monophylla.

Native of the Shan hills of Burma.

Nat. Ord. Orchideæ.—Tribe Ophrydeæ.

Genus Orchis, *Linn* ; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 620.)

Orchis *monophylla* ; caule infra folia brevi robusto, foliis 1 v. 2 sub-radicalibus oblongis ovato-oblongisve subacutis basi vaginantibus carnosulis luride viridibus maculis rubro-purpureis creberrime aspersis, pedunculo vaginis bracteisque viridibus punctis purpureis elongatis striatis, vaginis paucis lanceolatis erectis, racemo 2½-pollicari laxe-multifloro puberulo, bracteis lanceolatis ovario æquilongis brevioribusve, sepalis conniventibus parvis viridibus, dorsali ⅙ poll. longo oblongo obtuso, lateralibus majoribus late ovatis obtusis, petalis obovato-oblongis incurvis convolutis roseis, labello latiore quam longo sepalis duplo longiore 3-lobo pallide roseo lobis subæquilongis lateralibus patulis truncatis crenulatis immaculatis, intermedio quadrato discoque labelli pustulis roseis asperso, calcare ovario breviore obtuso incurvo, staminodiis magnis, polliniorum glandulis sacculis distinctis absconditis.

Habenaria monophylla, *Collett & Hemsl. in Journ. Linn. Soc.* vol. xxviii. (1890), p. 134. *Hook. f. Fl. Brit. Ind.* vol. vi. p. 143.

In the coloration of foliage *Orchis monophylla* is a very striking object, and resembles no other *Orchis* known to me, though recalling in some degree *Hemipilia calophylla*, Par. & Reichb. f., figured at t. 6920 of this work. In the latter plant, however, the spotting is dark brown.

Orchis monophylla was first described from a single, very poor specimen brought by Col. Sir H. Collett, K.C.B., F.L.S., from the Shan hills in Upper Burma, at an elevation of 4000 ft. Needless to say, it showed no other coloration than the uniform brown of a herbarium specimen. It was referred by its authors to *Habenaria*, in which genus I retained it in the "Flora of British India," pointing out its affinity with *H. Orchidis*. An examination of living specimens has enabled Mr. Rolfe to detect two membranous pouches covering the glands of the pollinia, as in typical *Orchis* ; and Messrs. King and Pantling in their invaluable Orchids of Sikkim ("Ann. Bot. Gard.," Calcutt., vol. viii. p. 302) have transferred *Habenaria Orchidis* also to *Orchis* (as *O. habenarioides*). In the above view of *O. monophylla* I entirely concur, as also in the remark of the latter authors, that the pink or purple colouring of the flower,

as distinguishing *Orchis* from *Habenaria*, is a character of considerable importance. With regard to *O. habenarioides*, on the other hand, I am not altogether satisfied; its pollinia differ from those of *O. monophylla* and the other Indian species of *Orchis*, in their glands being very large and oblong, and, according both to my own observations and the figure and description in the "Annals," are not enclosed in pouches. This consideration, together with the colour and sweet scent of the flowers, goes far towards favouring Lindley's original view, who, when first describing the *H. Orchidis* placed it in *Gymnadenia* (*G. cylindrostachya*, Lindl. Gen. & Sp. Orchid., p. 278).

Tubers of *O. monophylla* were received by the Royal Gardens, Kew, in March, 1896, from Mr. H. H. Hildebrand, C.S.I., Superintendent, S. Shan States. They flowered in May, 1897, in a greenhouse.

Descr.—*Tubers* oblong. *Stem* very short and stout below the leaves, clothed with annular sheaths. *Leaves* one or two, three to four inches long, oblong, or ovate-oblong, subacute, narrowed into a broadly sheathing base, coriaceous, uniformly lurid green on both surfaces, and covered closely with large, red-purple spots. *Peduncle* six to eight inches long, rather stout, green, speckled with short streaks of purple, as are the few lanceolate, erect sheaths and bracts. *Raceme* two and a half inches long, many- and lax-fld., pubescent. *Bracts* lanceolate, shorter than the ovary. *Flowers* about one-third of an inch broad across the lip, white, with a faint blush of pink; petals rose-coloured. *Sepals* small, green, pointing forwards; dorsal oblong, obtuse, one-sixth of an inch long; lateral, with their bases distant from the dorsal, larger, obliquely ovate, obtuse. *Petals* included, obovoidly obovate, incurved, one folded over the other. *Lip* twice as long as the sepals, about one-third of an inch broad, flat, broadly three-lobed, base contracted, ciliolate, side-lobes spreading, crenulate, unspotted, midlobe not longer than the side-lobes, quadrate, disk and midlobe covered with bright red pustular or scurfy points, spur about as long as the lip, tip rounded.—*J. D. H.*

Fig. 1, Side view of flower; 2, petals, base of lip and spur; 3, petal, 4, column and base of lip; 5, pollinium:—*All enlarged.*

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Tab. 7602.

COELOGYNE Swaniana.

Native of the Philippine Islands.

Nat. Ord. Orchideæ.—Tribe Dendrobieæ.

Genus Coelogyne, *Lindl.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 518.)

Coelogyne *Swaniana*; pseudobulbis 2–4-pollicaribus fusiformibus 4–6-gonis nudis diphyllis, foliis 6–8-pollicaribus petiolatis elliptico-lanceolatis acuminatis marginibus undulatis basi in petiolum angustatis, racemo e basi pseudobulbi enato pedali pendulo laxe multifloro, pedunculo rhachique gracilibus viridibus purpureo punctulatis, bracteis $\frac{2}{3}$ poll. longis cymbiformibus acutis pallide brunneis pedicellos æquantibus, sepalis pollicaribus lineari-oblongis subacutis carinatis, petalis linearibus acutis albis, labello 3-lobo pallide brunneo lobis lateralibus incurvis apice rotundatis, terminali recurvo orbiculari-ovato obtuso, disco 5-cristato, cristis apicem non attingentibus 2 lateralibus brevioribus intermediis ad basin labelli productis et ibidem in laminas laciniatas erectas productis, columna apice **dilatata truncata denticulata.**

C. Swaniana, *Rolfe in Kew Bullet.* 1894, p. 144; *in Orchid. Rev.* vol. ii. p. 198; *in Sander, Reichenbachia*, Ser. 2, vol. ii. t. 92.

Coelogyne Swaniana is compared by its author with the Bornean *C. Dayanna*, Reichb. f. (Williams, Orch. Alb. vi. t. 247, and Veitch Man. Orch. Part vi. p. 36 and 43, with fig.). The resemblance between these species is indeed very close, in pseudobulbs, leaves and flowers, but *C. Dayanna* is a larger plant, the sepals and petals have reflexed margins, as have the tips of the side-lobes of the lip, and there are no lamellæ at the base of the crests of the lip. These crests appear to vary a good deal in relative length.

This fine species was discovered in the Philippine Islds., by Mr. W. Micholitz, who sent specimens to Messrs. F. Sander & Co. of St. Alban's, according to whose wish it was named after J. M. Swan, Esq., A.R.A., a highly esteemed Artist.

The specimen figured was obtained by the Royal Gardens, Kew, from Messrs. Sander in 1892. It flowered in May and June.

Descr.—*Pseudobulbs* three and a half to four inches long, fusiform, obtusely four to six-angled, green, naked, the brown remains of the sheaths alone persisting on the

mature pseudobulb. *Leaves* two, six to eight inches long, elliptic-lanceolate, acuminate, narrowed into a petiole two to three inches long, bright green, strongly nerved beneath, margins more or less waved. *Peduncle* from the base of the pseudobulb, slender, with the rhachis of the raceme pale green, minutely dotted with dark purple. *Raceme* a foot long, pendulous, loosely many-flowered. *Bracts* three-quarters of an inch long, cymbiform, acute, pale brown, caducous. *Flowers* two inches broad, pedicel as long as the bract; ovary short, green, its six ribs crenulate, and dotted with dark purple. *Sepals* an inch long, linear-oblong, obtuse or sub-acute, white. *Petals* as long, but much narrower, white. *Lip* pale brown, darker round the margins and tips of the lobes; side-lobes short, rounded, mid-lobe orbicular-ovate, obtuse, disk with fine crested ridges, extending from the base to about the middle of the mid-lobe, three of them furnished at the base with a short, erect fimbriate lamella. *Column* yellow, broadly dilated at the top into a truncate crenulate hood. —*J. D. H.*

Fig. 1, Lip; 2, column; 3, anther; 4, pollinia :—*All enlarged.*

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Tab. 7603.

CALLIANTHEMUM RUTÆFOLIUM, *var.* ANEMONOIDES.

Native of the European and Asiatic Alps.

Nat. Ord. Ranunculaceæ.—Tribe Anemoneæ.

Genus Callianthemum, *C. A. Mey.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 5.)

Callianthemum *rutæfolium*; herba glaberrima, sub-acaulis, rhizomate crassiusculo elongato præmorso, foliis radicalibus petiolatis ambitu triangularibus decompositis, pedunculo unifloro nudo v. unifoliato, sepalis 5 rotundatis imbricatis deciduis, petalis 5–15, latis v. angustis.

C. rutæfolium, *C. A Mey. in Ledeb. Fl. Alt.* vol. ii. p. 336; *Fl. Ross.* vol. i. pp. 48, 734. *Schott, Œstr. Ranunc.* t. 6. *Reichb. Ic. Fl. Germ.* vol. iii. t. 25.

C. coriandrifolium, *Reichb. Fl. Germ. Excurs.* p. 727; *Ic. Fl. Germ. l. c.*

C. cachemirianum, *Camb. in Jacquem. Voy. Bot.* p. 5, t. 3. *Hook. f. Fl. Brit. Ind.* vol. i. p. 15.

C. bipinnatum, *Dulac, Fl. Hautes Pyren.* p. 216.

C. pimpinelloides, *Hook. f. & Thoms. Fl. Ind.* vol. i. p. 26.

C. acaule, *Cambess. mss. in Herb. Jacquem.*

Ranunculus rutæfolius, *Linn. Sp. Pl.* p. 552. *All. Fl. Pedem.* vol. iii. p. xi. t. 27, f. 1. *Jacq. Collectan.* vol. i. p. 136, t. 6, 7. *Ait. Hort. Kew.* Ed. 2, vol. iii. p. 355. *Poll. Fl. Veron.* vol. ii. p. 233. *DC. Syst.* vol. i. p. 238; *Prodr.* vol. i. p. 30. *Reichb. Ic. Fl. Germ.* vol. iii. t. 25. *Koch, Syn. Deutsch. Fl.* 1892, p. 355.

R. isopyroides, *DC. Syst. l. c.* 238; *Prodr. l. c.*

R. pimpinelloides, *Don in Royle Ill. Pl. Himal.* p. 53.

R. rutaceofolio, &c., *Bauh. Pinax*, p. 181. *Moris. Hist.* vol. ii. p. 448, f. 4, t. 31, f. 54.

R. præcox rutæfolio, *Clusius Hist.* vol. i. p. 232.

R. alp. coriandrifolio, *Pona, Pl. Bald. Mont.* Ed. 2. p. 87 (1617).

Var. anemonoides; petalis plurimis lineari-oblongis. C. anemonoides, *Endl. ex Heynh. Nom.* vol. ii. p. 106. *Schott, l. c.* Ranunculus anemonoides, *Zahlb. in Flora*, vol. vi. (1823), p. 220. *Reichb. Ic. Crit.* vol. viii. p. 31, t. 779.

After careful examination, in the Kew Herbarium, of upwards of a hundred specimens of the five published species of *Callianthemum*, from nearly fifty localities, procured by various collectors, between the Pyrenees and W. China, I have come to the conclusion that all may be regarded as forms of one. Of these forms the most distinct are, the large flowered, broad leaved *C. anemonoides*, with narrow petals on the one hand, and on the other the *C. coriandrifolium*, with small flowers, finely

divided leaves, and broad, almost rounded petals. No doubt these and other intermediate forms may prove to retain their characters under cultivation for an indefinite period, due to their long isolation in their individual native localities, and as such will be well worthy of cultivation. That here figured represents an alpine European form, specimens of which from Styria have triangular leaves, five inches in diameter, leaflets one and half in. long and broad, with three to five linear lobes, and narrow petals up to one in. long. Others from Lake Baikal have the peduncle twelve to sixteen inches long. The Himalayan *C. cachemirianum* is not distinguishable from the typical *rutæfolium*, it has leaves with short, broad leaflets, peduncles shorter than the leaves, and flowers one inch to one and half inch in diameter, with cuneately oblong petals; it inhabits the whole Himalayan range at elevations of nine thousand to seventeen thousand feet, as also Tibet. In the Kurrum Valley, Panjab, Dr. Aitchison describes it as reaching the snow line, that is the highest elevation of any flowering plant. In Europe it extends from the Pyrenees to the Eastern Austrian Alps, at eight thousand to ten thousand feet elevation. Its extreme Eastern and Southern limit is the mountains of Yunnan in China, where it was collected by the Abbé Delavay.

The specimen here figured of var. *anemonoides*, a native of Styria, flowered in the Royal Gardens in March, 1897.

Descr.—A glabrous, subglaucous herb, six to twelve inches high, with a stout rootstock, numerous radical leaves, and single-flowered peduncles. *Leaves* long-petioled; limb triangular in outline, bipinnatifid, with linear or broader lobes varying greatly in size. *Peduncle* naked, or bearing a small sessile leaf. *Flowers* one to one and a half inches broad. *Sepals* five, orbicular, imbricate, deciduous. *Petals* ten to fifteen, linear-oblong, white, or pale rose-coloured. *Stamens* very many, inserted on a hemispheric receptacle; anthers short. *Carpels* many, oblong, 1-celled, 1-ovuled, stigma small, sessile; ovule solitary, pendulous from near the top of the cell. *Achenes* coriaceous, oblong, obtuse. *Seed* pendulous.—*J. D. H.*

Fig. 1, Petal; 2 and 3, stamens; 4 and 5, carpels:—*All enlarged.*

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Tab. 7604.

IRIS Grant-Duffii.

Native of Palestine.

Nat. Ord. Irideæ.—Tribe Moræeæ.

Genus Iris, *Linn.* (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 686.)

Iris (Apogon) *Grant-Duffii*; rhizomate breviter repente, vaginis brunneis scariosis, foliis 5–6 linearibus firmis glaucis erectis, pedunculo monocephalo foliis multo breviore, spathæ valvis linearibus firmis viridibus, pedicello producto, ovario cylindrico rostrato, perianthii pallide lutei tubo brevi, segmentis exterioribus oblanceolato-oblongis supra medium patulis deorsum lineis transversalibus purpureis decoratis, segmentis interioribus brevioribus erectis concoloribus oblanceolatis unguiculatis, styli appendicibus pallide luteis lanceolatis.

I. Grant-Duffii, *Baker Handb. Irid.* p. 7.

This very distinct new *Iris* was first collected, so far as our records show, in 1864, by Mr. B. T. Lowne on the banks of the river Kishon. Several years later it was found by Sir M. E. Grant Duff in the plain of Esdraelon, recognized as a distinct species, and introduced into cultivation. It comes nearest to two of the North American species, *I. tenax*, Dougl. (Bot. Mag. tab. 3343), and *I. Douglasiana*, Herb. (Bot. Mag. t. 6083). Our drawing was made from a plant flowered by Mr. W. E. Gumbleton at Queenstown in February, 1897.

Descr.—*Rhizome* short, creeping. *Base of the stem* rather swollen, surrounded by a truncate scariose brown sheath. *Leaves* about six to a stem, linear, firm, erect, rather glaucous, a foot and a half or two feet long at the flowering season, flat, with a narrow, scariose, white margin. *Stem* much shorter than the leaves, simple, bearing one or two erect reduced leaves. *Spathe*-valves linear, firm, green, three or four inches long. *Pedicel* an inch long. *Ovary* cylindrical, rostrate, as long as the pedicel. *Perianth* pale yellow; tube very short; outer segments oblanceolate-oblong, three inches long, spreading from the middle, furnished with an orange keel, and veined below the middle

with lilac-brown; inner segments rather shorter, erect, concolorous, pale yellow, oblanceolate-unguiculate. Crests of the *style*-branches lanceolate, pale yellow.—*J. G. Baker.*

Figs. 1 and 2, stamens; 3, style-branch with stigma and appendages:—*All much magnified.*

S.del. J.N.Fitch lith.

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Tab. 7605.

ERIA latibracteata.

Native of Borneo.

Nat. Ord. Orchideæ.—Tribe Epidendreæ.

Genus Eria, *Lindl.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 509.)

Eria (Hymeneria) *latibracteata*; rhizomate brevi, pseudobulbis confertis 1–3½-pollicaribus 2–3-phyllis obovoideis v. fusiformibus sulcatis, foliis 2–4-poll. longis sessilibus ovato-oblongis -lanceolatisve acutis recurvis, pedunculo brevi valido bracteis paucis amplis vacuis instructo, racemo dependente puberulo 6–10-floro, pedunculo rhachique valido ovariisque viridibus rubro punctulatis, bracteis ½-poll. longis late cymbiformibus apiculatis patulis flavo-viridibus, floribus ½-poll. longis, sepalis pallide flavidis, dorsali galeato, lateralibus late ovatis obtusis in mentum rotundatum productis, petalis oblongis subacutis, labello sepalis paullo longiore trilobo, lobis lateralibus roseis apice rotundatis disco inter lobos cristis 2 carnosis apice rugosis aucto, terminale aureo transverse oblongo, disco late incrassato carnoso rugoso, columna apice crenata.

C. latibracteata, *Rolfe mss.*

The genus *Eria* is one of the largest of Orchids in tropical Asia; nearly 100 species (of which upwards of twenty were previously undescribed) are recorded in the "Flora of British India," and a considerable number have, since the publication of that work, been discovered within the geographical limits of its flora. The total number of known species cannot be under 250. *E. latibracteata* belongs to the largest section of the genus, founded more on habit than on any definite characters. Its nearest ally is *E. bractescens*, Lindl. (Bot. Reg. 1841, Misc. No. 46 and 1844, t. 29), a Burmese and Malayan plant, to be distinguished by the 2-lobed tips of the leaves, much smaller, narrower bracts and flowers, longer and more slender pedicels and narrower sepals.

E. latibracteata was imported from Borneo by Messrs. Sander & Co., of St. Albans, who sent specimens to the Herbarium at Kew to be named in July, 1895; and from whom the specimen here figured was received; it flowered in the Royal Gardens in July, 1897.

Descr.—*Pseudobulbs* fascicled on a short rootstock, one to three and a half inches long, ovoid to fusiform, terete,

sulcate, dark green, formed of two to four internodes. *Leaves* two to three, two to four inches long, sessile, oblong-lanceolate, acute, spreading and recurved. *Racemes* from the base of the pseudobulb, with the short peduncle four inches long, drooping; peduncle and rhachis stout, green, and as well as the pedicels and ovary speckled with red. *Flowers* six to ten, loosely racemed; pedicels with ovary half an inch long, curved. *Bracts* about half an inch long, broadly oblong, cymbiform, apiculate, spreading, yellow-green. *Flowers* half an inch long; sepals and petals connivent, very pale, dull yellowish. *Dorsal sepal* galeate; lateral much larger, their gibbous bases together forming a large rounded mentum. *Petals* oblong, sub-acute. *Lip* hardly longer than the sepals, 3-lobed, side-lobes dark rose-red, apex rounded, disk between the side-lobes with two fleshy ridges ending abruptly in tubercled calli, mid-lobe transversely oblong, golden-yellow, with a very broad fleshy caruncled disk, tip 3-lobulate.—*J. D. H.*

Fig. 1, Lip; 2, column; 3, anther; 4 and 5, pollinia:—*All enlarged.*

M.S. del. J.N. Fitch lith.

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Tab. 7606.

CALOCHORTUS clavatus.

Native of California.

Nat. Ord. Liliaceæ.—Tribe Tulipeæ.

Genus Calochortus, *Pursh.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 220.)

Calochortus (Mariposa) *clavatus*; bulbo ovoideo parvo tunicis exterioribus pallidis, caule erecto gracili simplici vel furcato, foliis linearibus vel subulatis, sepalis ovatis acuminatis dorso viridibus facie luteis obscure maculatis, petalis latis cuneatis aurantiacis supra medium nudis, ungue lato pilis copiosis luteis apice clavatis vestito supra basin foveolâ orbiculari prædito, antheris linearibus obtusis purpureis filamentis æquilongis, ovario cylindrico-trigono.

C. clavatus, *S. Wats. in Proc. Amer. Acad.* vol. xiv. p. 265; *Bot. Calif.* vol. ii. p. 176.

This species, for garden purposes, is one of the finest of all the *Calochorti*. It belongs to the section *Mariposa*, which is marked by its large, erect, butterfly-like flowers, which are white, lilac, or yellow, and often beautifully variegated towards the base with spots or bands. Its nearest allies are *C. luteus*, Dougl. (Bot. Reg. t. 1567), and *C. Weedii*, Wood (*C. citrinus*, Baker in Bot. Mag. t. 6200), from which it is best distinguished by the club-shaped tips of the hairs that cover the claw, to which the name refers. It was first collected in 1878, by Mr. J. G. Lemmon, near San Luis Obispono, and soon afterwards by Mrs. Elwood Cooper at Santa Barbara. It has only lately been introduced into cultivation by Mr. Carl Purdy, of Ukiah, who makes a specialty of *Erythronia* and *Calochorti*, and it has not been previously figured. Our drawing was made from a plant that flowered in an open border on the south side of the Orchid House at Kew, in June, 1897.

Descr.—*Bulb* small, ovoid; outer tunics membranous, pale. *Stem* erect, slender, a foot or a foot and a half long, simple or forked, distantly leafy. *Leaves* linear or subulate, reaching a length of three or four inches. *Flowers* solitary, erect. *Sepals* ovate, acute, about an inch long, green on the outside, yellow, and obscurely spotted near the base on the inside. *Petals* cuneate, bright yellow, an

inch and a half or two inches broad, naked over the upper half of the face, covered over the broad claw with yellow hairs with club-shaped tips, and furnished with an orbicular hairy nectary. *Stamens* a third the length of the petals; anther linear, obtuse, purple, as long as the flattened filaments. *Ovary* cylindrical-trigonous; stigmas three, linear.—*J. G. Baker.*

Fig. 1, Club-shaped tip of a hair from the petal; 2, stamen; 3, ovary:—*All enlarged.*

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Tab. 7607.

CORTADERIA jubata, *Stapf.*

Native of the Andes.

Nat. Ord. Gramineæ.—Tribe Arundineæ.

Genus Cortaderia; (*Stapf in Gard. Chron.* 1897, vol. ii. p. 396.)

Cortaderia *jubata*; gramen perenne, culmis validis dense cœspitosis biannuis, internodiis supremis ultra pedalibus, foliis basin versus culmum congestis $\frac{1}{3}$-poll. latis tenuissime caudato-acuminatis, ligula e pilis sericeis, panicula plumosa 1–2-pedali laxiuscula sub-erecta v. nutante, ramis inferioribus 1–1$\frac{1}{4}$-pedalibus gracillimis flexuosis, spiculis unisexualibus nitidis purpureo subtiliter tinctis, glumis vacuis sub-æqualibus anguste lineari-lanceolatis apicibus acutis v. bidenticulatis 1-nerviis nervo infra apicem evanido, glumis floriferis vacuis sub-similibus 3-nerviis, masculis glabris, fem. copiose et longe pilosis, pilis $\frac{1}{6}$ poll. longis, palea brevi hyalina 2-nervi, lodiculis ciliatis, staminodiis fl. fem. gracilibus apicibus antheriferis v. clavellatis, ovario glabro, caryopside anguste oblonga hilo lineari.

G. jubatum, *Lemoine ex Carr. in Rev. Hort.* vol. xlix. p. 419.

G. roseum Rendatleri, *The Garden*, vol. viii. p. 165 (*nomen*).

?G. argenteum carminatum Rendatleri, *Flore des Serres*, t. 2075. *Chron.* 1874, p. 419.

To those who know *Gynerium sacharoides*, Humb. & Bonpl. (Tab. Nostr. 7352) it will be no surprise to learn that the Pampas Grass of our gardens has been removed from that genus. This has been done by Dr. Stapf, in the *Gardener's Chronicle* cited above, where the name *Cortaderia* is given to the Pampas Grass and its congeners, from their being known as "Cortadora" by the Spanish-speaking people of America. The species of *Cortaderia* are confined to the Andes from Ecuador to Chili, together with New Zealand, if the *Arundo conspicua*, Forst. f. be included. Other species are *C. argentea*, Stapf (the Pampas Grass, which is, however, not a native of the Pampas, but of the Cordillera), *C. chilensis*, Stapf; *C. speciosa*, Stapf (*G. speciosum*, Nees), and *C. Quila*, Stapf.

Cortaderia jubata is a native of the Andes of Ecuador, Bolivia, and Peru. It was first collected about 1830, by the late Col. Hall, the energetic explorer of Ecuador, in ravines near Quila, alt. 10,000 ft. It was introduced into

cultivation in Europe by M. Lemoine, who received seeds from Chimborazo. There are, besides Hall's specimen in the Kew Herbarium, others collected by Pentland at Cuzco, alt. 11,380 ft , and in wet places near Sorata in Bolivia, alt. 9-12,000 ft., by Mandon. According to Dr. Stapf it differs from *C. argentea* in the rather laxer, more graceful panicle, with longer, more flexuous, nodding branches, somewhat smaller spikelets, more delicate glumes, and in the longer, very slender staminodes of the fem. fl. The colouring of the glumes is neither constant in, nor confined to *C. jubata*.

The specimen of the latter here figured was sent to me by Mr. Gumbleton, from his famous garden at Belgrove, County Cork, in October, 1895, with the information that it was a far more beautiful grass than *C. argentea*. The panicle, he tells me, more resembles that of *Arundo conspicua*, but is much larger, and of a lovely pale lavender colour. Unfortunately the plant did not prove hardy, having been killed by 29° of frost in the following winter.

Descr.—A densely tufted, glabrous, perennial grass, with biennial culms, and the leaves crowded round their bases; upper internodes more than a foot long. *Leaves* long, slender, drooping on all sides, ending in filiform points, margins scabrid, ligule a ridge of silky hairs. *Panicle* one to two feet long, inclined or nodding, laxly plumose, pale straw-coloured, suffused with purple, branches filiform, flexuous, lower a foot and upwards long, nodding. *Spikelets* half an inch long, three to five-flowered, male nearly glabrous, fem. silky, with very long hairs. *Glumes* hyaline, lower two empty, subequal, narrowly linear-lanceolate, finely acuminate, glabrous, 1-nerved, tip acute or 2-toothed; flowering glumes narrowly lanceolate, acuminate, 3-nerved, male glabrous, fem. bearded with very long, silky hairs. *Stamens* reduced to filiform staminodes in the fem. spikelets. *Ovary* glabrous. *Grain* narrowly oblong, hilum linear.—*J. D. H.*

Fig. 1, Portion of leaf; 2, male spikelet; 3, base of male flowering glume; 4, palea; 5, anther; 6, fem. spikelet; 7, base of fem. flowering glume; 8, lodicules and ovary:—*All enlarged.*

M.S del. J.M.Fitch lith.

Vincent Brooks, Day & Son Lith. Imp.

L. Reeve & C.° London.

Tab. 7608.

TCHIHATCHEWIA isatidea, *Boiss.*

Native of Armenia.

Nat. Ord. Cruciferæ.—Tribe Isatideæ.

Genus Tchihatchewia, *Boiss.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 93.)

Tchihatchewia *isatidea*; herba perennis, tota pilis elongatis patulis simplicibus brevioribusque furcatis hispido-strigosa, radice elongata, caule erecto humili robusto dense folioso superne ramoso ramis corymbosis floribundis, foliis sessilibus v. breviter petiolatis lineari-oblongis obtusis patenti-recurvis integerrimis v. remote dentatis, costa lata, floribus in racemos breves densifloros ramulos terminantes erectis breviter pedicellatis, sepalis linearibus obtusis lateralibus basi saccatis, petalis longe unguiculatis, lamina ungue dimidio breviore rosea, filamentis edentulis, ovario breviter stipitato oblongo stellatim tomentello 2-loculare loculis uniovulatis, stigmate sessile bilobo, siliqua majuscula pendula ovata obovata v. obcordata obtusa v. apice emarginata late alata alis coriaceis, nucleo valde compresso 2-loculari indehiscente, loculo uno tantum seminifero, semine a funiculo brevi pendulo orbiculari valde compresso, testa coriacea brunnea, cotyledonibus latis planis radicula magna accumbente.

T. isatidea, *Boiss. in Tchihatch. As. Min. Bot.* vol. i. p. 292; *Fl. Orient*, vol. i. p. 310.

A no less singular than beautiful Crucifer, discovered by the late Count Paul de Tchihatchef during his travels in Asia Minor, at an elevation of 5000 to 6000 ft. on the mountains near the town of Erzinhan, in the Pachalik of Erzeroum; that is at the sources of the Euphrates. There is an error in Boissier's description of the genus, where the pod is described as one-celled and two-seeded, there being in fact two cells, separated by a membranous septum, one of them containing a perfect seed, the other an arrested (? always) ovule. The genus is closely allied to *Peltaria*, L., differing in the 2-celled ovary.

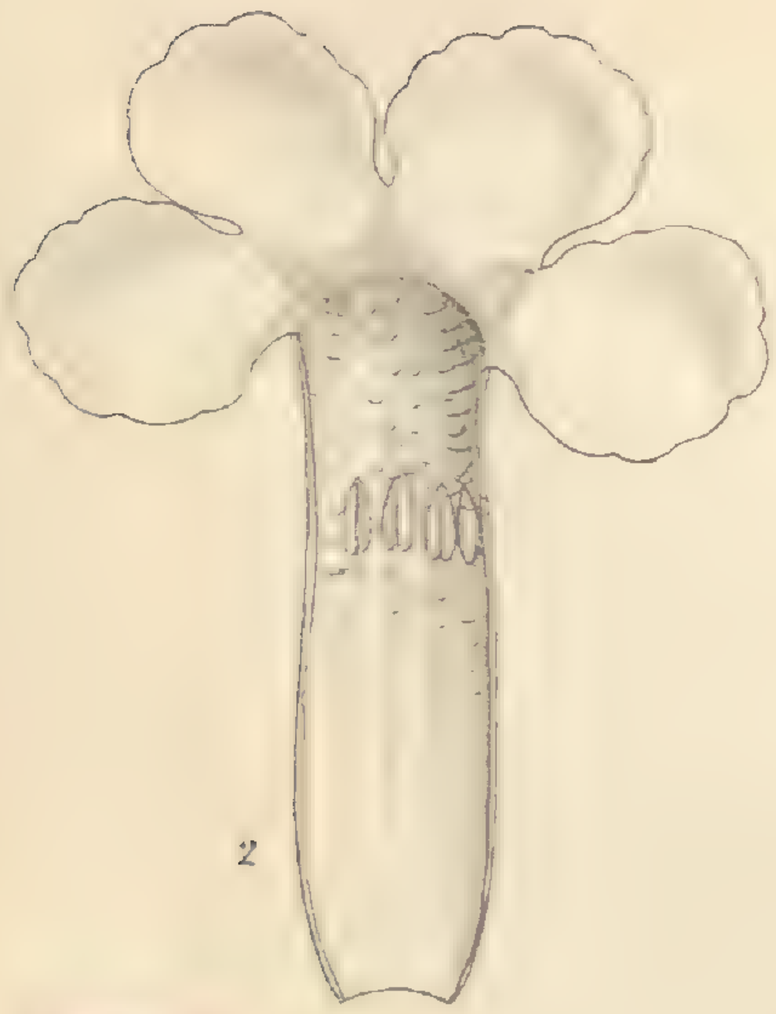
Count de Tchihatchef was a famous traveller and writer, who, besides his opus magnum in seven volumes, on the geography, climate, zoology, botany and geology of Asia Minor, was the author of works on the Bosphorus, Travels in the Eastern Altai, Spain, and Algeria. He was a Correspondent of the Institute of France, and was well known and highly esteemed in scientific and literary society in England and throughout the Continent.

August 1st, 1898.

Seeds of *Tchihatchewia* were received at the Royal Gardens, Kew, from the Imperial Botanical Gardens of St. Petersburgh, in 1896, plants raised from which flowered in the open air in May, 1898.

Descr.—A stout, perennial rooted, densely leafy herb, hispid, with long simple, and short stellate hairs. *Stem* six to ten inches high, very stout, copiously corymbosely branched above, the branches all flowering. *Leaves* one and a half to two and a half inches long, spreading and recurved, the upper gradually larger, sessile, linear, sub-acute, hispidly hairy on both surfaces, midrib very stout. *Flowering branches* short, densely crowded, many-fld., together forming a hemispheric corymb, four inches in diameter. *Pedicels* shorter than the calyx. *Sepals* erect, linear, obtuse, sparsely stellately hairy, lateral gibbous at the base. *Petals* with the oblong, recurved, rose-red limb about half as long as the claw. *Filaments* simple. *Ovary* oblong, stellately tomentose, 2-celled, stigma sessile, 2-lobed, anthers oblong. *Siliqua* an inch long, pendulous, obcordate or ovate, tip notched or 2-lobed, nucleus narrow, 2-celled, wings broad, septum membranous, one cell empty, the other 1-seeded. *Seed* orbicular, compressed, cotyledons acumbent.—*J. D. H.*

Fig. 1, Flower; 2, stamens and ovary; 3, ovary; 4, hairs from do.; 5, portion of fruiting raceme; 6, transverse section of siliqua; 7, seed; 8, embryo:—All but fig. 5 *enlarged.*



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Tab. 7609.

BUDDLEIA variabilis, *Hemsl.*

Native of China.

Nat. Ord. Loganiaceæ.—Tribe Euloganieæ.

Genus Buddleia, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 793.)

Buddleia *variabilis*; frutex polymorpha, ramulis floriferis sub-teretibus tetragonis v. tetraquetris foliisque subtus primum plus minus fulvo-tomentosis, foliis sessilibus v. sub-sessilibus oppositis paribus basi linea elevata auriculave conjunctis anguste oblongo- v. ovato-lanceolatis acutis obtusis v. caudato-acuminatis integerrimis crenato-dentatis grosse serratisve discoloribus, floribus in thyrsos elongatos terminales capitulaque axillaria densiflora dispositis brevissime pedicellatis bibracteolatis, calycis brevis glabri v. pubescentis lobis oblongis obtusis, corollæ tubo ½ poll. longo gracili recto cylindraceo intus pilosulo, lobis rotundatis sub-crenatis lilacinis ore aurantiaco, antheris medio tubo sessilibus, ovario glabro, stylo brevi, capsula anguste oblongo-clavata glabra, seminibus compressis anguste alatis basi et apice in caudas productis.

B. variabilis, *Hemsl. in Journ. Linn. Soc.* vol. xxvi. (1889) p. 120.

A native of the mountains of the provinces of Hupeh, Ichang Palung, Nanto, and Mts. to the northward, where it was discovered by Dr. Henry. Also found in Mount Omei, in Szechuen, at an elevation of 6000 ft. by Faber, and by Potani, in the Tibetan province of Kam. Mr. Hemsley, from whose description that given above is mainly taken, says of it that its extreme forms, here treated as one species, are very different in foliage, but connected by every intermediate gradation. From a careful examination of a large number of specimens I can unhesitatingly adopt Mr. Hemsley's view. The leaves especially are extraordinarily variable, from a few inches long, broadly oblong-lanceolate and obtuse, to upwards of a foot long, narrowly lanceolate and caudate-acuminate. In a decorative point of view it is a very handsome plant, with rather dark green leaves. The flowers, which have been described as rose-coloured, are in the Kew individual of a clear lilac colour, with the mouth of the corolla orange-yellow.

The figure here given of *Buddleia variabilis* is taken from a plant received at the Royal Gardens, Kew, from the

Jardin des Plantes in 1896, which flowered against a S.E. wall in the open air in July, 1897. In the Jardin des Plantes it forms a large ornamental shrub eight feet high, flowering freely in July and August.

Descr.—A tall shrub, very variable in foliage and hairyness, with leaves and branchlets more or less tomentose in a young state, glabrous, or nearly so when old; flowering branchlets terete or tetragonous. *Leaves* opposite, the petioles of each pair joined at the base by a raised line on the branchlets, or by a small broad, green, recurved stipular auricle, four inches to a foot long, from oblong-lanceolate and obtuse to linear-lanceolate and caudate acuminate, entire, crenate-toothed, or coarsely serrate, dark green above, paler beneath; petiole terete. *Flowers* densely crowded in large, globose heads, which are peduncled in the axils of the upper leaves, or collected in erect, caudiform thyrsi, four to six inches long, very shortly pedicelled; bracts subulate, about as long as the calyx, and appressed to it. *Calyx* about one-tenth of an inch long, slender, oblong, cleft into four narrow obtuse lobes. *Corolla-tube* half an inch long, slender, terete, sparsely hairy within; limb about one-sixth of an inch in diameter, lobes orbicular, sub-crenate. *Anthers* sessile above the middle of the tube, very small, oblong. *Ovary* oblong, terete, glabrous. *Style* short, stigma oblong, two-lobed. *Capsule* one-quarter of an inch long, clavate.—*J. D. H.*

Fig. 1, Flower and bracts; 2, corolla laid open; 3, ovary; 4, ripe fruit; 5, seed:—All but fig. 4 *enlarged.*

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Tab. 7610.

LEDUM glandulosum, *Nutt.*

Native of California and British Columbia.

Nat. Ord. Ericeæ.—Tribe Rhodoreæ.

Genus Ledum, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 599.)

Ledum *glandulosum*; frutex robustus, 2–3-pedalis, cortice fusco, ramulis foliisque glaberrimis, foliis petiolatis oblongis ellipticisve obtusis v. sub-acutis 1–2-poll. longis basi acutis supra luride viridibus, subtus palli-oribus punctis resinosis creberrimis fere argenteis, racemis corymbosis, bracteis cymbiformibus, floribus longe gracile pedicellatis fere ½-poll. latis, sepalis 5 parvis ciliatis, petalis 5 oblongis apices versus ciliatis, staminibus 10, filamentis basin versus pilosis, capsulis late oblongis retusis puberulis et glanduloso-punctatis, seminibus angustis late alatis.

L. (Ledadendron) glandulosum, *Nutt. in Trans. Am. Phil Soc. n. ser.* vol. viii. (1843), p. 270. *A. Gray in Bot. Calif.* vol. i. p. 459; *Synopt. Fl. N. Am.* vol. ii. Part I. p. 43. *Coulter, Man. Bot. Rocky Mts.* p. 229. *Macoun, Cat. Canad. Pl.* (1890), p. 239.

C. californicum, *Kellog in Proc. Calif. Acad.* vol. ii. (1863), p. 14.

Ledum glandulosum has an extensive range in the Sierra Nevada and Rocky Mountains of Western North America, from Tulare County, California, lat. 36° N., where it attains an elevation of 8–9000 ft. to 51° N. in the Rocky Mts., where it was found by M. Macoun at 6000 ft. elevation. How much further north it extends is not known, but it advances southwards along that range to Colorado. I collected it in fruit, in company with Dr. Gray, in the Silver Mt. Pass of the Sierra Nevada (California) in 1877. Though first made known by Nuttall, who found it in the Rocky Mts., it was discovered in about 1826 by Douglas, from whom there is a (flowerless) specimen in the Kew Herbarium, collected "at the confluence of the Columbia River, towards Puget's Sound."

The plant at the Royal Gardens, Kew, from which the accompanying figure was made, was raised from seeds received in 1894 from Professor Sargent (the Arnold Arboretum), which flowered in the Arboretum of Kew in May, 1897.

Descr.—An evergreen, erect shrub, two to six feet high,

branches covered with dark brown bark. *Leaves* one to two inches long, oblong or elliptic, acute or sub-acute, base cuneate, dark green above, beneath more or less silvery, with minute, white, waxy glands, which extend to the pedicels of the flowers calyx and capsule; petiole about a sixth of an inch long. *Flowers* about half an inch in diameter, white, in corymbose clusters of simple racemes, one-half to one inch long. *Bracts* one-tenth to one-fourth of an inch long, boat-shaped, red-brown, deciduous; pedicels one-half to nearly one inch long, very slender. *Sepals* 5, small, oblong, obtuse, ciliate. *Petals* spathulately oblong, concave, ciliate above the middle, punctulate with glands. *Stamens* longer than the petals, filaments slender, hairy towards the base, anthers oblong. *Ovary* conical, densely clothed with white glands; style elongate, glabrous. *Capsule* one-fourth of an inch long, oblong, retuse, puberulous and glandular. *Seeds* somewhat sickle-shaped, nucleus linear, surrounded by a membranous wing.—*J. D. H.*

Fig. 1, Portion of upper surface of leaf; 2. flower; 3. petal; 4 and 5, stamens; 6, pistil; 7, portion of fruiting raceme; 8, ripe capsule; 9, seed:—All *enlarged*, except fig. 7, which is of *nat. size.*

M.S. del. J.N. Fitch lith.

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Tab. 7611.

RIBES villosum, *C. Gay.*

Native of Chili.

Nat. Ord. Saxifrageæ.—Tribe Ribesieæ.

Genus Ribes, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 654.)

Ribes (Ribesia) *villosum*; frutex erectus, ubique tomentosus, ramulis robustis teretibus, cortice atro-fusco, foliis orbiculari-ovatis sub-integris v. breviter 3-lobis basi rotundatis cordatisve supra convexis 3–5-nerviis, lobis brevibus latis crenulato-dentatis, petiolo $\frac{1}{2}$–$\frac{2}{3}$ poll. longo, racemis spiciformibus florentibus foliis brevioribus breviter pedunculatis cylindraceis densifloris nutantibus, fructiferis elongatis folia superantibus, bracteis oblongis calyce brevioribus, calycis aurei tubo campanulato, lobis brevibus late ovatis recurvis, petalis anguste ovatis lanceolatisve calycis lobis brevioribus erectis, antheris sub-sessilibus, baccis villosis atro-purpureis.

R. villosum, *C. Gay, Fl. Chil.* vol. iii. p. 33. *Walp. Ann.* vol. i. p. 975.

R. Bridgesii & R. Lavallei, *Hort.*

The genus *Ribes*, which is nowhere found to the southward of lat. 28° N. in the Old World, in the New extends from the N. Polar regions to Tierra del Fuego. Scarcely a dozen species are found in Europe and Asia; in Europe itself eight; in the Oriental region seven (all but one also Western European); in the Himalaya, where the genus reaches its Southern limits in the Old World (in Sikkim), eight (three of them European, and one Oriental); in China, according to Hemsley's list, eight (three of them European, and one Oriental); in Japan three, one of them European, another American. In the New World, on the other hand, twenty-three species are enumerated in the United States, and thirty-two in the Andes of S. America. Twenty-eight species are cultivated in the Arboretum of the Royal Gardens, Kew.

R. villosum is a native of the Chilian Cordillera, in the Campañas of Quillota and Santiago, at 8000 ft. elevation, where the fruit is, according to C. Gay, its author, much liked. It has been in cultivation in the Kew Arboretum for probably half a century, for I find a flowering specimen in the Herbarium, marked as having been collected there in 1858. Of its origin there is no record. It flowers annually

in June, is perfectly hardy, and retains its foliage through ordinary winters. Its nearest ally is *R. punctatum*, DC. of Chili (Lindl. in Bot. Reg. (1834) t. 1658), of which it may be only a variety, but which differs in the deeply lobed leaves, ciliate petioles, and small, glabrous berries.

Descr.—An erect shrub, branchlets, foliage, and inflorescence, uniformly sub-glandular-tomentose; branches stout, terete, covered with a black-brown bark. *Leaves* petioled, orbicular-ovate, one to one and a half inches diam., sub-entire, or broadly shortly 3-lobed beyond the middle, crenulately toothed, convex above, 3–5-nerved from the rounded or cordate base, lurid green on both surfaces, paler and strongly nerved beneath; petiole one-half to two-thirds of an inch long; stipules oblong, fugacious, tips rounded. *Racemes* spiciform, flowering suberect or drooping, shortly peduncled, shorter than the leaves, cylindric, dense-fld.; fruiting elongate, pendulous. *Bracts* shorter than the calyx-tube, ovate-oblong. *Flowers* sub-sessile, about one-sixth of an inch long, and as broad across the mouth, golden-yellow. *Calyx tube* campanulate, lobes small, broadly ovate, recurved. *Petals* minute, lanceolate, obtuse, erect, shorter than the calyx-lobes. *Anthers* nearly sessile in the throat of the calyx. *Styles* short, recurved. *Berries* pisiform, violet-black, hirsute.—*J. D. H.*

Fig. 1, Portion of rhachis of raceme, with bracts and flowers; 2, flower with half the calyx-tube removed; 3 and 4, anthers:—*All enlarged.*

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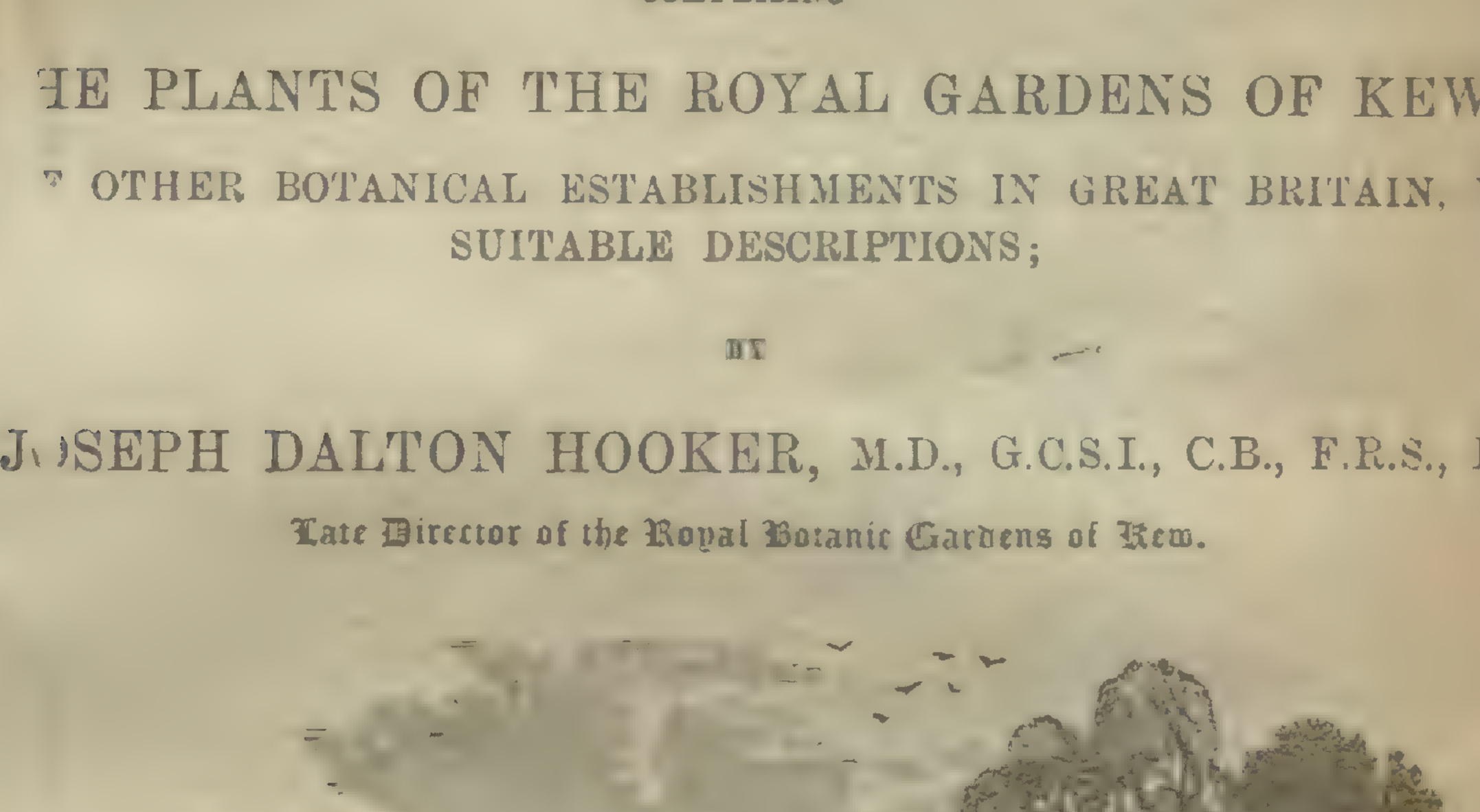

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Tab. 7612, 7613.

EULOPHIELLA Peetersiana, *Kränzl.*

Native of Madagascar.

Nat. Ord. Orchideæ.—Tribe Vandeæ.

Genus Eulophiella; (*Rolfe in Lindenia*, vol. iii. p. 29.)

Eulophiella *Peetersiana*; gigantea, rhizomate elongato 1–2-poll. crasso cylindraceo repente radicante pseudobulbos foliiferos scaposque emittente, internodiis brevibus vestigiis squamarum vestitis, radicibus crassis vermiformibus, foliis fasciculatis 3–5-pedalibus erectis lanceolatis subacutis multinerviis, scapo 3-pedali e basi ascendente erecto robusto viridi squamoso, squamis brevibus obtusis vaginantibus inferioribus basin versus scapi imbricatis superioribus remotis, racemo pedali multifloro erecto, rhachi stricta robusta viridi, bracteis pollicaribus late oblongis cymbiformibus apice rotundatis griseis, floribus confertis 3½–4 poll. latis, pedicellis cum ovariis 3-pollicaribus roseis, sepalis petalisque subæqualibus orbiculari-obovatis concavis læte roseo-purpureis basi albis, his paullo minoribus, labello petalis breviore, lobis lateralibus late oblongis incurvis albis roseo-purpureo marginatis, terminale transverse late oblongo 2-lobulato roseo-purpureo basi albo, disco albo basi 3-lamellato, inter lobos laterales carinis 5 aureis percurso, carinis 3 interioribus ad basin lobi terminalis in dentes 3 erectos aureos productis, columna lobis lateralibus labelli breviore, anthera mitriforme papillosa, polliniis hemisphæricis excavatis in glandulam orbicularem sessilibus.

E. Peetersiana, *Kränzl.* in *Gard. Chron.* 1897, vol. i. p. 182. *Masters l. c.* 1898, vol. i. p. 200, fig. 76, *cum Ic Suppl. Rolfe in Orchid. Rev.* vol. v. (1897), pp. 67, 101, 206. *Journ. Hortic.* Ser. III. vol. xxxvi. (1898), p. 343, fig. 66.

The superb plant here figured is a native of Madagascar, and appears, according to Dr. Kränzlin, to have been discovered by Johannes Braun, who died at Antananarivo, and who sent to that botanist leaves of it which measured two feet in length. Living plants were subsequently sent by Mr. Mocoris to Mr. Peeters of St. Giles, near Brussels, who flowered the specimen from which Dr. Kränzlin drew up his description. According to the latter the plant bears sub-compressed pseudobulbs eleven inches long, covered with decaying leaves. These pseudobulbs are probably not yet developed in the magnificent specimen here figured (which is another of the many triumphs of Sir Trevor Lawrence's successful Orchid culture). The only other known species of *Eulophiella* is *E. Elizabethæ*, Rolfe, figured at t. 7387 of this work, also a native of Mada-

gascar, in which pseudobulbs such as are described by Dr. Kränzlin, as occurring in *E. Peetersiana*, are well developed. The flowering specimen of *E. Peetersiana* was kindly sent for figuring in this Magazine, from Burford Lodge, in the middle of April of the present year. The reduced view of the whole plant, t. 7613, is adapted from the Gardener's Chronicle, and a coloured sketch by Mr. W. H. White.

Descr.—*Rootstock* cylindric, creeping over rocks, one to two inches in diameter, emitting at the nodes stout vermiform roots, and bearing stout pseudobulbs nearly a foot long, clothed with leaf-remains; internodes of rootstock very short, clothed with withered scales. *Leaves* tufted, three to five feet long, lanceolate, sub-acute, erect, many-nerved. *Scape* erect from an ascending base, three feet high, as thick as the little finger, green, bearing many short, appressed, obtuse, sheathing scales, that are imbricating below and distant higher up. *Raceme* about a foot long, erect, of many rather crowded flowers; rhachis stout, terete, green. *Bracts* about an inch long, oblong, boat-shaped, tips rounded, grey. *Pedicels* with the ovaries three inches long, rose-red. *Flowers* three and a half to four inches in diameter. *Sepals* and *petals* subequal, orbicular-oblong, concave, bright rose-purple with white bases, petals rather smaller than the sepals. *Lip* shorter than the petals; side lobes broad, obtuse, erect and incurved, white, broadly edged with rose-purple; mid-lobe broadly transversely oblong, bilobulate, rose-purple, except at the base, where it passes into the white of the disk of the lip; the latter has between the side lobes three broad, erect, obtuse lamellæ, then five slender golden ribs, which extend to the base of the mid-lobe, where they end as rather large, triangular, laterally compressed, golden teeth.—*J. D. H.*

Tab. 7612. Upper portion of leaf and raceme of *E. Peetersiana*, of the *natural size.*

Tab. 7613. *Reduced* view of whole plant; Fig. 1, lip; 2, column and anther; 3 and 4, pollinia:—*All enlarged.*

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Tab. 7614.

RHODODENDRON YUNNANENSE, *Franch.*

Native of Yunnan.

Nat. Ord. Ericeæ.—Tribe Rhodoreæ.

(Genus Rhododendron, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 599.)

Rhododendron (Eurhododendron) *yunnanense*; frutex erectus, ramis robustis, ramulis cortice fusco tectis, foliis breviter petiolatis 2½–3 poll. longis elliptico-lanceolatis acutis acuminatisve coriaceis basi angustatis supra luride viridibus marginibusque setulosis, costa pallida, subtus pallidioribus glaberrimis sparse lepidotis, nervis utrinque costæ ad 9 gracillimis, petiolo crassiusculo ⅙–¼ poll. longo, floribus erecto-patentibus in corymbos terminales laxuos dispositis, rhachi glaberrima robusta pollicari, bracteis filiformibus, pedicellis ¾–1-poll. longis, calyce minuto cupulari lepidoto margine undulato, corolla 2 poll. expans. late infundibulari alba fauce basin versus loborum posticorum maculis sanguineis aspersa, lobis tubo alte 5-costato intus pubescente multo longioribus oblongis obtusis patenti-recurvis, 2 anticis majoribus, staminibus 10 lobis corollæ longioribus patentim declinatis, filamentis exsertis gracilibus infra medium barbatis, antheris parvis oblongis flavo-brunneis, ovario oblongo 5-loculari dense lepidoto, stylo gracili glaberrimo, stigmate capitellato.

R. yunnanense, *Franch. in Bull. Soc. Bot. France*, vol. xxxiii. (1886), p. 233. *Forbes & Hemsl. in Journ. Linn. Soc.* vol. xxvi. (1889), p. 32.

The rapidly increasing number of new species of *Rhododendron* coming from Western China, renders their identification by published descriptions proportionally difficult, and it hence becomes the duty of the *Botanical Magazine* to figure as many of these as it can consistently with the claims of other interesting plants. A specimen of the species here figured was sent to Mr. Franchet (by whom a host of Chinese species have been for the first time described), and he has identified it with his *R. yunnanense*, one of the Abbé Delavay's many discoveries, a native of Houang-li-pin in Yunnan. The specimen figured is from a plant received at the Royal Gardens, Kew, from Messrs. Veitch in 1894, and which flowered in April, 1897. It differs a little from Franchet's description, in having no scales on the upper surface of the leaf, and in the calyx not being ciliolate. It is perfectly hardy at Kew.

Descr.—An erect shrub; branches stout, terete, clothed

with black-brown bark, branchlets woody, setulose; leaf-buds about half an inch long, lanceolate, scales small, glabrous. *Leaves* two and a half to three inches long, shortly petioled, elliptic-lanceolate, sub-acute, coriaceous, above dark green, opaque, with a pale midrib, covered, as are the margins, with short, scattered, stiff sub-erect hairs, base acute, narrowed into a rather stout petiole one-sixth to one-fourth of an inch long; beneath pale green, quite glabrous, sparsely lepidote, nerves about nine on each side of the stout midrib, very slender, spreading. *Flowers* few, sub-racemosely corymbose on a very stout, terminal, erect, annulate rhachis, sub-erect or spreading, white, with blood-red oblong spots towards the bases of the upper corolla-lobes. *Pedicels* three-fourths to one inch long. *Calyx* minute, cupular, lepidote, margin undulate. *Corolla* two inches across the limb, tube shortly funnel-shaped, pubescent within, strongly 5-ribbed; lobes longer than the tube, spreading and recurved, oblong, obtuse, the three upper rather shorter than the two lower. *Stamens* ten, exserted, nearly as long as the corolla-lobes, filaments declinate, spreading, bearded below the middle; anthers very small, pale brown. *Ovary* conically oblong, terete, 5-celled, densely lepidote; style slender, glabrous; stigma capitellate.—*J. D. H.*

Fig. 1, Portion of upper, and 2, of under surface of leaf; 3, lepidote scale; 4, calyx and ovary; 5, stamen:—*All enlarged.*

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Tab. 7615.

LOBELIA intertexta, *Baker*.

Native of Central Africa.

Nat. Ord. Campanulaceæ.—Tribe Lobelieæ.

Genus Lobelia, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 551.)

Lobelia (Hemipogon) *interterta*: herba tenella, laxe cæspitosa, e basi diffuse ramosa, ramis erectis angulatis pilosulis, foliis parvulis sparsis orbiculatis late ovatis obtusis crenatis in petiolum lamina breviorem angustatis utrinque glaberrimis marginibus ciliatis, supra læte viridibus subtus purpurascentibus, supremis linearibus, floribus ½-poll. diam. apices versus ramulorum laxe racemosis longe graciliter pedicellatis, bracteis ad basin pedicellorum linearibus crenatis, calycis tubo parvo obconico, lobis subulatis patentibus corollæ tubo brevioribus ciliatis, corollæ tubo cylindraceo ⅕ poll. longo intus piloso, limbi labio superiore profunde trilobo lobis late ovatis sub-acutis patentibus, inferiore multo minore bipartito segmentis lanceolatis deflexis, filamentis basi liberis pilosis, antheris inclusis parvis 3 apiculatis barbatis, ovario brevi turbinato, stylo glaberrimo basi late conico, stigmate hemispherico bifido annulo pilorum cincto, capsula obconica.

L. intertexta, *Baker in Kew Bulletin*, No. 139 (1898), p. 157.

The little *Lobelia* here figured resembles very closely the common *L. Erinus*, Linn., of our gardens (tab. 901), a native of South Africa, and is nearer still to the variety *bicolor* of that plant (tab. 514, *L. bicolor*), which has similarly hairy stems. It is in fact one of a puzzling group of African congeners, extending from Abyssinia to the Cape Colony, which includes *L. Erinus*, *L. ambrosa*, Hochst., *L. urutidens*, Hk. f., *L. trullifolia*, Hemsl., and others, all of which require good figures for their accurate identification.

L. intertexta is a native of the Nyika plateau in British Central Africa, at an elevation of 6000 to 7000 ft., where it was discovered by A. C. Whyte, Esq., F.L.S., Superintendent of the Forest Department (under Sir H. Johnston, K.C.B.), who has further transmitted to Kew an Herbarium of 1500 species from the same region.

The plant figured was raised from seed received in 1897, which yielded plants that flowered in a stove in December

of the same year. It is a very elegant pot-plant, of graceful habit, flowering profusely.

Diosr.—A very slender, diffusely branched annual, decumbent below, with ascending, loosely leafy branches four to six inches long, sparsely covered with spreading hairs. *Leaves* alternate, rather distant, uniform, one-third to half an inch long, broadly ovate, obtuse, coarsely irregularly crenate, glabrous on both surfaces, but ciliate on the margins, pale green above, reddish purple beneath, base narrowed into a ciliate petiole shorter than the blade. *Flowers* from the upper leaf axils, and loosely racemed at the ends of the branches ; pedicels very slender, lower up to an inch and a half long, bracteate at the base. *Bracts* much shorter than the pedicels, linear or lanceolate, crenate, green, the lower broader and foliaceous. *Calyx-tube* minute, obconic, lobes a fifth of an inch long, subulate, ciliate, spreading. *Corolla-tube* longer than the calyx-lobes, cylindric, hairy within ; limb 2-lipped, lower lip half an inch broad, deeply three-lobed, lobes sub-equal, broadly ovate, acute, spreading, white below the middle, with a violet spot at each sinus, wholly violet beyond the middle ; upper lip of two small, oblanceolate, acute, parallel, spreading or deflexed violet segments. *Filaments* free, hairy below ; anthers small, oblong, three with bearded tips. *Ovary* turbinate, very short, style glabrous, base conical, stigma small, hemispheric, bifid, girt with a ring of hairs.—*J. D. H.*

Fig. 1, Flower ; 2, ovary, calyx, and stamens ; 3, ovary :—*All enlarged.*

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Tab. 7616.

CALLISTEPHUS HORTENSIS, *Cass.*

Native of Western China.

Nat. Ord. Compositæ.—Tribe Asteroideæ.

Genus Callistephus, *Cass.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 270.)

Callistephus *hortensis*; herba annua, erecta, robusta, ramosa, hirtella, foliis alternis ovatis grosse inæqualiter et obtuse dentatis lobulatisve basi cuneatis in petiolum latum angustatis, capitulis ad apices ramorum solitariis sessilibus amplis heterogamis radiatis, floribus omnibus fertilibus, radii femineis 1–pluri-seriatis disci hermaphroditis, involucri hemisphærici bracteis multiseriatis exterioribus subfoliaceis squarroso-recurvis interioribus scariosis erectis appressis oblongis obtusis, receptaculo planiusculo alveolato, fl. radii ligulis patentibus obtusis, fl. disci tubulosis, tubo infra medium abrupte angustato, ore breviter obtuse 5-lobo, antheris basi obtusis, styli ramis brevibus complanatis obtusis, acheniis compressis apice annulo minutissimo setuloso coronatis, pappi setis tenuibus barbellatis caducis.

C. hortensis, *Cass. in Dict. Sc. Nat.* xxvii. (1825), p. 491. *Forbes & Hemsl. in Journ. Linn. Soc.* vol. xxvi. 407.

C. chinensis, *Nees, Aster.* p. 222. *DC. Prodr.* vol. v. p. 274. *Clarke, Comp. Ind.* p. 41. *Bretschneid. Early Europ. Res. Fl. China*, p. 101.

Callistemma hortensis, *Cass. in Bull. Philom.* 1817, p. 32; *Opusc.* t. 7; *et in Dict. Sc. Nat.* vol. vi. *Suppl.* p. 45; *Ic. Bot. Dicot.* t. 90.

Diplopappus chinensis, *Less. Syn. Comp.* p. 165.

Aster chinensis, *Linn. Sp. Pl.* p. 877. *Mill. Gard. Dict.* Ed. 8, No. 30. *Ait. Hort. Kew.* Ed. 1, vol. iii. 20.

Aster Chenopodii folio &c., *Dill. Hort. Eltham.* p. 38, t. 34 (1732).

Aster 3, *Trew, Hort. nitidiss.* t. 121, 122 (1786).

Though the "China Aster" has been repeatedly figured under its garden forms, I know of only two really good representations of it as found in a wild state, one in the "Hortus Elthamensis" of Dillenius, published in 1732, the other in Trew's "Hortus nitidissimus" (1786). There is a fair one in the "Dictionaire des Sciences Naturelles," but it is too much reduced to give a satisfactory idea of the plant, which is now rarely seen except in a condition with the disk flowers ligulate.

As a genus *Callistephus* is distinguished from *Aster* by the inner scarious involucral bracts, to which most authors add the crown of minute bristles forming what has been considered an outer pappus, but this is sometimes an all but imperceptible character. It has no congeners, and its

generally adopted name is posterior to that of *Callistemma*, also of Cassini, which that author himself suppressed, in consequence of its being so near to *Callistemon* of Brown.

The indigenous form of the China *Aster* appears to be common in the rocky hills of Northern China, from the neighbourhood of Peking to the Yang-tse-Kiang. There are also specimens in the Kew Herbarium from Eastern Turkestan, Western Tibet and Afghanistan, but in the more western of these localities it is no doubt only known as a cultivated plant, as it is in Japan. According to Aiton it was introduced into England by Ph. Miller in 1731 : and Dillenius, who received seeds from Prof. Van Royen of Leyden, figured it in 1732. The specimen here figured flowered in the Herbaceous grounds of the Royal Gardens, Kew, in October, 1897, but did not mature seed. It was raised from seeds presented in 1896 by the Messrs. Vilmorin & Co., which were obtained from the Abbé Farges, who collected them in Eastern Szechuan.

Descr.—A tall, stout, erect, leafy annual, two to three feet high, corymbosely branched above, covered with spreading hairs ; stem and branches angular, of a rich purple brown colour. *Leaves* two to four inches long, alternate, ovate, deeply, coarsely, obtusely toothed or lobulate, contracted at the cuneate base into a winged petiole. *Heads* solitary, terminating the branches, up to three and a half inches in diameter. *Involucre* campanulate, outer bracts many, herbaceous, lanceolate, obtuse, spreading and recurved, often margined with red-brown ; inner erect, linear-oblong, obtuse, scarious. *Receptacle* nearly flat, pitted. *Ray fl.* very many, ligulate, 1–2-seriate, linear, obtuse, violet-blue, female. *Disk fl.* very many, bisexual, golden-yellow, tubular, suddenly contracted below the middle, mouth shortly five-toothed. *Style* branches short, oblong, flattened. *Achenes* of all the flowers fertile, oblong, or obovate-oblong, compressed, pubescent, crowned with a ring of very minute bristles. *Pappus* hairs barbellate, white.—*J. D. H.*

Fig. 1, Fl. of ray with portion of ligule removed; 2, pappus hair; 3, achene of do. ; 4, fl. of disk ; 5, anthers ; 6, top of style of disk fl. ; 7, ripe achene of do.:—*All enlarged.*

Tab. 7617.

CYRTOSPERMA SENEGALENSE, *Engl.*

Native of Upper Guinea.

Nat. Ord. Aroideæ.—Tribe Orontieæ.

Genus Cyrtosperma, *Griff.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 997.)

Cyrtosperma (Lasimorpha) *senegalense*; foliis ambitu hastato-oblongis subacutis, lobis basilaribus oblongo-lanceolatis obtusis lamina $\frac{1}{2}$–$\frac{1}{3}$ brevioribus sinu angusto, petiolo elongato pedunculoque sparse aculeatis, pedunculo robusto petiolo duplo longiore, spatha fere pedali oblongo-lanceolata valde acuminata flavo-viridi rubro-brunneo fasciata basi vix convoluta, spadice spatha multo breviore cylindracea obtusa saturate violaceo-purpurea, floribus 3–4-meris, perianthii segmentis quadratis truncatis, anthera filamento quadrato æquilonga et-lata, ovario oblongo in stylum brevem crassum clavatum desinente, stigmate parvo umbonato, baccis monospermis.

C. senegalense, *Engl. Monog. Arac.* p. 270.

Lasimorpha senegalensis, *Schott in Bonplandia* 1857, p. 127; *Gen. Aroid.* t. 85, fig. 1–10; *Prodr. Aroid.* p. 406.

The genus *Cyrtosperma* consists of nine or ten species of tall, tropical Asiatic, African, and American Aroids, natives of watery places. It has been divided by Schott and Engler into several sections, according to the number of parts of the flower and ovules in the ovary. *C. senegalense* inhabits swamps along the whole west coast of tropical Africa from Senegal, where it was discovered by the French botanical collectors, Heudelot and Perrottet, to Fernando Po and Old Calabar. It is closely allied to *C. Afzelii*, Engl., a much larger species, said to attain a height of twelve to thirteen feet, with a spathe twenty inches long, and a globose spadix, which, like that of *C. senegalense*, is almost black-purple.

A drawing of the spathe of *C. senegalense*, sent to Kew by Mr. Harold B. Lloyd, Assistant Curator, Bot. Garden, Old Calabar, represents that organ as nearly eighteen inches long, and the spadix as nearly six inches long. The tuberous roots of *C. senegalense* were sent to Kew in July, 1897, by the late Mr. H. W. L. Billington, who as Curator of the Botanical station of Old Calabar, fell a victim to the malarious climate of the African coast. It

flowered in a stove of the Royal Gardens in March of this year, and the spathe continued fresh till the end of May.

Descr.—Rootstock a large tuber. *Leaves* long-petioled, blade a foot long, sagittately oblong, sub-acute, basal lobes one-third to half as long as the blade above them, oblong-lanceolate, obtuse, diverging from a narrow sinus, bright green above, paler beneath; nerves many, diverging from the stout midrib, lowest pair decurrent in the basal lobes; petiole three to four feet high, sparsely prickly, green. *Peduncle* much longer than the petiole, green, sparsely prickly. *Spathe* a foot to eighteen inches long, oblong-lanceolate, long-acuminate, externally dull green, clouded with red, within pale yellow-green, with broad indefined interrupted bands of maroon brown, tip not twisted, base hardly convolute, margins narrowly recurved. *Spadix* two to six inches long by less than half to three-fourths of an inch in diameter, shortly stipitate, cylindric, obtuse, dark violet-purple. *Flowers* tetramerous, rarely trimerous. *Perianth-segments* equal or unequal, quadrate, truncate. *Stamens* nearly as long as the perianth-segments, anthers didymous, as long and broad as the square filaments. *Ovary* oblong, slightly narrowed into the stout clavate style, which is crowned by the umbonate stigma.—*J. D. H.*

Fig. 1, Portion of spadix and flowers; 2, perianth-segment; 3 and 4, stamens; 5, ovary:—*All enlarged.*

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Tab. 7618.

CYTISUS purgans, *Boiss.*

Native of Centr. and S. France and N. Spain.

Nat. Ord. Leguminosæ.—Tribe Genisteæ.

Genus Cytisus, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 484.)

Cytisus (Spartocytisus) *purgans*; frutex erectus, ramosissimus, mox aphyllus, ramis ramulisque sub-erectis teretibus viridibus, foliis sparsis parvis sessilibus ramulis brevissimis insertis 1–3-foliolatis, foliolis linearibus v. lineari-oblongis obtusis sub-sericeis basi angustatis, floribus solitariis binisve ad nodos superiores pedicellatis, basi foliis minutis unifoliolatis instructis, calyce parvo campanulato bilabiato puberulo, basi minute bibracteolato, labiis obtusis, vexillo orbiculari emarginato marginibus incurvis basi cordata auriculis inflexis, alis obovato-oblongis vexillo fere æquilongo, carina oblonga obtusa, antheris linearibus apiculatis, ovario hirsuto, stylo filiformi, stigmate capitellato, legumine pollicari lineari-oblongo piloso oligospermo, valvis convexis brunneis, seminibus orbicularibus compressis olivaceis nitidis, strophiolo crenato.

C. purgans, *Boiss. Voy. Bot. Esp.* (1838-1845) p. 134, lin. 8. *Spach in Ann. Sc. Nat. Ser.* III. vol. iii. (1845) p. 156. *Willk. & Lange, Fl. Hispan.* vol. iii. p. 456.

Spartocytisus purgans, *Webb. & Berth. Phyt. Canar. Sect.* ii. p. 45 (*in nota*).

Sarothamnus purgans, *Gren. & Godr. Fl. Franc.* vol. i. p. 349.

Genista purgans, *Linn. Syst.* Ed. x. p. 1157. *Lamk. Fl. Franc.* vol. ii. p. 618. *DC. Prodr.* vol. ii. p. 149. *Bull., Herb. France*, p. 117, t. 115.

Spartium purgans, *Linn. Syst.* Ed. xii. p. 474. *Lodd. Bot. Cab.* t. 1117. *Asso, Syn. Stirp. Aragon.* p. 90, t. 10. *Ait. Hort. Kew.* Ed. ii. vol. iv. p. 255.

A very handsome dwarf Broom, native of rocky hills in France, from the Loire southward, and of the northern half of Spain. Though bearing the name of *purgans*, it has no place in any modern Pharmacopœia; nor, except a bare mention of it, as a purgative and emetic, in Planchon and Collins' "Drogues Simples" (vol. ii. p. 514) to which my friend Mr. Holmes drew my attention, can I find any other account of its properties than that given by Bulliard in his "Herbier de la France" cited above. This last author places it in his list of poisonous plants, with the French name of Genèt Griot, and says of it, that besides the emetic and purgative properties of *Genista tinctoria*, it is a diuretic and hydragogue. He evidently considers its use as dangerous, for he recommends antidotes in cases of poisoning by a too free use of it.

October 1st, 1898.

According to Ph. Miller *Cytisus purgans* was introduced into England before 1768. It is an old inhabitant of the Royal Gardens, Kew, where it flowers in May. According to Willkomm and Lange the flowers have the fragrance of vanilla, but this was hardly perceptible in our specimens.

Descr.—An erect, nearly glabrous, copiously branched, rigid shrub, three to five feet high, with sub-erect branches, often nearly leafless, and erect, striated, sub-sericeous branchlets. *Leaves* hardly half an inch long, scattered, sub-sessile, trifoliolate; leaflets linear- or linear-obovate, minutely silky beneath; stipules 0. *Flowers* in loose, erect racemes at the ends of the branches, solitary or binate, from the axil of a minute, persistent, unifoliolate leaf, sub-erect, half an inch long, golden-yellow. *Pedicels* shorter than the flowers, minutely pubescent. *Calyx* one-tenth of an inch long, turgid, silky, minutely bibracteolate, at the base, 2-lipped, lips broad, obtuse, upper minutely 2-lower 3-toothed. *Standard* erect, orbicular, very shortly clawed, concave, margins incurved, base shortly cordate, with two small inflexed auricles. *Wing-petals* about one-fourth shorter than the standard, obovate-oblong, concave, tips rounded. *Keel-petals* nearly as long as the wings. *Staminal-tube* shortly ten-cleft, filaments subulate, anthers ovate-oblong, apiculate. *Ovary* villous, narrowed into a glabrous style nearly as long as the pod, stigma minute. *Pod* an inch long, linear-oblong, three- to four-seeded; valves thin, hairy. *Seeds* orbicular, compressed, smooth; funicle crenate.—*J. D. H.*

Fig. 1, Portion of branchlet with calyx bracteoles and stamens; 2, standard; 3 and 4, anthers; 5, ovary; 6, pod; 7, seed:—*All enlarged*, except fig. 6, which is of the *nat. size*.

7611

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Tab. 7619.

AMELANCHIER CANADENSIS, *Medic.* var. OBLONGIFOLIA, *Torr. & Gr.*

Native of the Eastern United States and Canada.

Nat. Ord. Rosaceæ.—Tribe Pomeæ.

Genus Amelanchier, *Lindl.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 628.)

Amelanchier *canadensis*, var. *oblongifolia*; frutex v. arbuscula ramulis foliisque oblongis subtus albo-lanatis demum glabratis, racemis brevisculis, calycis lobis ovato-lanceolatis, petalis obovatis calycis lobis duplo longioribus, fructu globoso carnoso.

A. canadensis, *var.* oblongifolia, *Torr. & Gray, Fl. N. Am.* vol. i. p. 473. *Torrey, Fl. N. York*, vol. i. p. 225. *A. Gray Man. Bot. N. U. States*, Ed. 1880, p. 162. *Macoun Cat. Canad. Pl.* 1883, p. 149. *Bean in Gard. Chron.* 1897, vol. i. p. 265, and p. 333, fig. 115.

A. canadensis, *var.* obovalis, *Sargent, Silva of N. Am.* vol. iv. p. 128, t. 195.

A. ovalis, *DC. Prodr.* vol. ii. p. 632, *Loud. Arboret.* vol. ii. p. 876, fig. 632. *Hook. Fl. Bor. Am.* vol. i. p. 202. *Emmerson, Trees & Shrubs of Mass.* p. 444, and Ed. II. vol. ii. p. 504.

A. intermedia, *Spach, Hist. Veg. Phan.* vol. ii. p. 85. *Wenzig in Linnæa*, vol. xxxviii. (1874) p. 112.

A. oblongifolia, *Roem. Syn. Rosifl.* p. 147.

A. spicata, *Decne Mem. Fam. Pom.* p. 135, t. 9, fig. 5 (*non Lamk.*).

Aronia ovalis, *Pers. Syn.* vol. ii. p. 39. *Torrey, Comp. Fl. N. & Midd. U. St.* p. 203.

Pyrus ovalis, *Bigel. Fl. Bost.* Ed. II. p. 195 (*non Willd.*).

?P. Neumanniana, *Tausch. in Flora*, vol. xxi. (1838) *Beibl.* p. 76.

Mespilus canadensis, *var.* obovalis, *Michx. Fl. Bor. Am.* vol. i. p. 291.

Cratægus spicata, *Lam. Dict.* vol. i. p. 84. *Nouv. Duham.* vol. iv. p. 132.

Swamp Sugar Pear, Swamp Pyrus, *U. St.*

Amelanchier canadensis, the June-berry, Shad-bush, Grape Pear, or Service-berry, of the United States, is a very variable plant, especially in the form and size of the leaves, their indumentum, the length of the racemes, and the form of the calyx-lobes and of the petals. Torrey & Gray have in the Flora of N. America made five varieties. Sereno Watson, in his Bibliographical Index to N. Am. Botany, has most carefully elaborated the synonymy of these, and I have followed, with few exceptions, his synonymy of the variety here figured, omitting a few references of no importance. The species, under one or other form, ranges over the whole of temperate N. America, from Florida to

Hudson's Bay, and from the Atlantic to the Pacific. Of these forms, the Western var. *alnifolia*, with roundish leaves, is the most distinct, and is retained as a species by S. Watson in the "Flora of California," though reduced by A. Gray. Var. *oblongifolia* is best known as the Swamp Sugar Pear. Macoun, in his "Catalogue of Canadian Plants," says that it extends from New Brunswick to the Rocky Mts., and as far north as the Mackenzie River; but in the U. States it appears to be confined to the eastern side of the continent. According to Sir J. Richardson the variety abounds in the sandy plains of the Saskatchewan River, where the wood is prized by the Cree Indians for making arrows and pipe-stems, whence the name given to it by the Canadian voyagers of Bois de Flêche. Its berries, about the size of a pea, are eaten by the Cree Indians, both fresh and dried, and form a pleasant addition to pemmican; they further form an ingredient in puddings little inferior to plum-puddings. Emmerson describes it as one of the earliest and most conspicuous ornaments of swampy woods in the State of Massachusetts.

The figure here given was made from a bush in the Arboretum of the Royal Gardens, Kew, raised from seed sent in 1891 by H. P. Kelsey, Highlands Nursery (Mitchell & Co.) Kawana, N. Carolina.

Descr.—*Amelanchier canadensis*, var. *oblongifolia*, differs from typical *canadensis* in its smaller size, usually shrubby habit, leaves less sharply serrate, covered with matted tomentum beneath, longer racemes, more obovate petals, and more juicy berries.—*J. D. H.*

Fig. 1, Calyx and bract; 2 and 3, stamens:—*All enlarged.*

M.S del, J.N. Fitch lith.

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Tab. 7620.

FEIJOA Sellowiana, *Berg*.

Native of S. Brasil and Uruguay.

Nat. Ord. Myrtaceæ.—Tribe Myrteæ.

Genus Feijoa, *Berg*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 712.)

Feijoa *Sellowiana*; frutex v. arbuscula erecta, foliis subtus et inflorescentia albo-tomentosis, cortice brunneo, foliis breviter petiolatis oblongis obtusis coriaceis supra læte viridibus penninerviis nervis patentibus, pedicellis unifloris oppositis axillaribus demum ramulo excrescente quasi lateralibus, calycis tubo elongato supra ovarium non producto anguste turbinato basi bracteolis minimis 2 instructo, limbi segmentis orbicularibus persistentibus reflexis lateribus demum involutis, petalis 4 orbicularibus patenti-reflexis extus albis intus sanguineis marginibus albis, staminibus perplurimis in alabastro rectis per anthesin elongatis petala superantibus, filamentis gracilibus sanguineis, antheris parvis orbicularibus dorsifixis aureis, loculis pilosis connectivum crassiusculum cingentibus, ovario 4-loculari, stylo crassiusculo superne attenuato curvo, stigmate capitellato, ovulis numerosis biseriatis placentis angulo interiore loculorum affixis, bacca magna late oblonga calycis segmentis coronata pulposa viridi aromatica 4-loculari polysperma, seminibus reniformi-rotundatis compressis, testa coriacea, embryone spiraliter convoluto, cotyledonibus angustis, radicula elongata obtusa.

F. Sellowiana, *Berg in Linnæa*, vol. xxix. (1858) 258, et in *Mart. Fl. Bras.* vol. xiv. pars I. p. 616, et Suppl. t. liv. (*folium*). *Kiaerskou, Enum. Myrt. Bras.* p. 187. *André in Rev. Horticol.* vol. lxxv. (1898) No. xi. p. 264, *cum ic.*

Orthostemon Sellowianus, *Berg l. c.* vol. xxvii. (1854) p. 449.

Araça do Brazil; Arasa do Rio Grande; et Goyabo del Pays, *in col.*

Flowering, and subsequently fruiting specimens of this interesting plant were sent to me in 1896, by my friend M. André, from his Garden, Villa Colombia, Golfe S. Juan, as a species of *Psidium*? from Uruguay, with an eatable fruit, accompanied with the request that I would determine its name. This, owing to an important error in the description of *Feijoa* in Martiu's "Flora Brasiliensis," proved to be a very troublesome task, and it was not until I undertook a systematic inspection of the whole vast tribe of *Myrteæ* in the Kew Herbarium that I was able to give M. André the name, under which he published it in the "Rev. Horticol." cited above. The error alluded to was describing the seed as albuminous, with flat, foliaceous cotyledons, characters foreign to the Order *Myrtaceæ*.

With the habit of *Psidium*, *Feijoa* differs from that genus

in the elongated ovary, in the filaments erect in bud (in which it differs from all other *Myrtaceæ*), and in the hairy anthers.

Feijoa was discovered by the late Fr. Sellow of Potsdam, who, in 1819, accompanied Prince Neuwied in his journey to Brasil as a plant collector, on the recommendation of Sir Joseph Banks and Mr. Lambert. After his return Sellow's collections were widely distributed, and there is a good set of them in the Kew Herbarium, including *Feijoa*, which was found in the *Cocos australis* region, of the district of Rio Grande do Sol. Since that period wild and cultivated specimens have been sent by various Brasilian collectors. Specimens communicated by Glaziou from the Rio Botanical Gardens are numbered 6156, 7886.

The name *Feijoa* was given in compliment to Don J. da Silva Feijo, Director of the National History Museum of San Sebastian. Over and above the beauty of the foliage and flower of the plant, it is remarkable for the rich aromatic odour and flavour of its guava-like fruit.

Descr.—An erect shrub or small tree, with brown bark, and leaves clothed beneath with snow-white appressed tomentum. *Leaves* two to three inches long, opposite, shortly petioled, oblong, obtuse, smooth, deep green and shining above. *Flowers* solitary, axillary, stoutly pedicelled, drooping, about two inches broad across the petals. *Calyx* white-tomentose, tube elongate, sub-clavate, bibracteolate at the base, not produced beyond the ovary, lobes orbicular, reflexed. *Petals* orbicular, spreading, externally white-tomentose, internally blood-red, with white margins. *Stamens* very many, filaments erect in bud, at length spreading, longer than the petals, blood-red, anthers small, yellow, pubescent. *Ovary* four-celled, cells many-ovuled; style stout, narrowed below the capitellate stigma. *Berry* two inches long, by one and three-quarters in diameter, oblong, crowned with the calyx-lobes, many-seeded, pericarp thin, green, sarcocarp fleshy, aromatic. *Seeds* reniformly orbicular, compressed, testa coriaceous. *Embryo* spirally coiled.—*J. D. H.*

Fig. 1, Bud with perianth removed on one side, showing the erect stamens and style; 2 and 3, anthers; 4, calyx-tube and style; 5 and 6, transverse sections of ovary at different stages of development; 7, ripe fruit; 8, seed: 9, embryo:—*All enlarged*, except 7 and 8, which are of *nat. size*.

M.S.del.J.N.Fitch lith

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Tab. 7621.

RHODODENDRON RUBIGINOSUM, *Franch.*

Native of Yunnan.

Nat. Ord. Ericaceæ.—Tribe Rhodoreæ.

Genus Rhododendron, *Linn.* (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 599.)

Rhododendron *rubiginosum*; frutex 3-pedalis, glaberrimus, ramis robustis petiolis foliisque subtus flavo-brunneis squamulis rufo-brunneis dense lepidotis, gemmis foliiferis parvis, foliis petiolatis 2–3-pollicaribus oblongo- or ovato-lanceolatis utrinque acutis coriaceis supra luride viridibus opacis sparse lepidotis, nervis secundariis utrinque costæ 6–12 gracilibus, floribus 4–8 corymbosis breviter pedicellatis, calyce minuto obtuse breviter 5-lobo, corolla 1½ poll. expans. laete rosea, tubo late infundibulari extus sparse lepidoto, lobis tubo brevioribus rotundatis undulatis 2 posticis rubro maculatis, staminibus 10 corolla brevioribus, filamentis infra medium pubescentibus, antheris rubris, ovario oblongo 5-loculari lepidoto, stylo glabro.

R. rubiginosum, *Franch. in Bull. Soc. Bot. Fr.* vol. xxxiv. (1887) p. 282. *Forbes & Hemsl. in Journ. Linn. Soc.* xxvi. (1889) 30.

This is another of the swarm of Western Chinese Rhododendrons discovered by the indefatigable Abbé Delavay, and described by M. Franchet in the Bulletin of the Botanical Society of France. Its nearest ally, according to him, is *R. polylepis*, from the same country, which has similar coloured lepidote scales on the corolla, and on the under surface of the leaf, but has exserted stamens.

Another near congener is from a very distant country, namely, *R. punctatum*, Andr. (Bot. Rep. t 36, Bot. Mag. t. 2285, Bot. Reg. i. t. 37, Wats. Dendrolog. ii. t. 162 A., Vent. Hort. Cels. t. 15) of the mountains of Georgia and N. Carolina. A glance at the figure of that plant in this work shows how marked the resemblance is between it and *R. rubiginosum*, and bearing in mind that the flowers of *R. punctatum* vary greatly in size and colour (as the figures above cited show), it is difficult to say how the two are to be distinguished, except by the much larger flower of the Chinese plant, which has also disproportionately large highly coloured anthers, and much less hairy filaments. Differential characters may be found in the fruit of the latter which is not known.

M. Franchet describes the interior of the corolla-tube

as shortly hairy within, but it is glabrous in the Kew plant.

R. rubiginosum is a native of Tsangshan Mt., above Tali, in the province of Yunnan, at an elevation of 6000 to 7000 ft. The plant from which the figure is taken was obtained by the Royal Gardens, Kew, in 1894, from Messrs. Veitch. It flowers in April and May, and is quite hardy.

Descr.—A rigid shrub, three feet high, with stout branches and brown branchlets, which, with the leaves beneath, petioles, pedicels, calyx and ovary, are densely clothed with red-brown circular lepidote scales. *Leaves* two to three inches long, ovate- or oblong-lanceolate, acute or acuminate, narrowed into a short petiole, dull green, opaque above, with a few lepidote scales, yellowish beneath; leaf-bud scales small, orbicular. *Flowers* few, corymbose, shortly pedicelled. *Calyx* very small, obtusely 4-lobed. *Corolla* one and a half inches broad, bright rose-red, tube broadly funnel-shaped, rather longer than the orbicular, undulate, spreading lobes, the two upper of which are spotted with red. *Stamens* 10, filaments shorter than the corolla, minutely pubescent towards the base; anthers large, red-purple. *Ovary* oblong, 5-lobed; style long, glabrous, stigma pale.

Fig. 1, Upper, and 2, undersurface of leaf; 3, calyx and ovary; 4, lepidote scale; 5 and 6, stamens:—*All enlarged.*

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Tab. 7622.

ASTRAGALUS ponticus.

Native of Asia Minor.

Nat. Ord. Leguminosæ.—Tribe Galegeæ.

Genus Astragalus, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 506.)

Astragalus (Alopecias) *ponticus*; herba erecta, 2–3-pedalis, perennis, caule robusto simplici tereti glabro v. villoso, foliis alternis pedalibus patenti-decurvis brevissime petiolatis, rhachi gracile glabra v. pubescente, foliolis 15–25-jugis pollicaribus sub-sessilibus ovato-oblongis obtusis supra glabris subtus pilosis pubescentibusve, stipulis liberis triangulari-lanceolatis pollicaribus fuscis, capitulis magnis axillaribus sub-sessilibus v. breviter pedunculatis, oblongo-globosis multi-densifloris, floribus pollicaribus breviter pedicellatis primulinis, bracteis lanceolatis calycis tubo oblongo brevioribus, calycis hirsuti dentibus triangulari-ovatis lanceolatisve tubo triplo v. quadruplo brevioribus, vexillo oblongo retuso alis longe unguiculatis paullo longiore, legumine parvo calyce incluso ovato compresso hirto 2-loculari oligospermo, seminibus parvis subreniformibus.

A. ponticus, *Pallas, Sp. Astrag. Descrip.* p. 14, t. xi. *DC. Prodr.* vol. ii. p. 295. *Ledeb. Fl. Ross.* vol. i. p. 635. *Boiss. Fl. Orient.* vol. ii. p. 408. *Bunge, Gen. Astrag. Geront.* p. 95.

A. polycephalus, *Tenore, Hort. Neap. ex Bunge l. c.*

The genus *Astragalus* is one of the very largest in the Vegetable Kingdom, upwards of fifty genera have been carved out of it, to be subsequently merged in it. According to the "Index Kewensis" it contains upwards of 1600 species, a number which will no doubt be considerably augmented when the Floras of China and Tibet are better known. Of all these species scarcely a dozen have been figured in any work devoted to garden plants, and of those that have been, almost all are confined to the plates of this Magazine. Now that rock-gardening is being pursued, no doubt many will be brought into cultivation, for not a few are remarkable for beauty of foliage and flowers.

A. ponticus belongs to a section of the genus which inhabits South Europe and Western and Central Asia. It is found over a wide tract of country in Europe and W. Asia, its western limits being Bulgaria and Podolia, and Bessarabia in Southern Russia. In Asia Minor it extends from Armenia to Kurdistan and thence to Mt. Elwend in Western Persia. One of its nearest allies is *A. narbonnensis*,

Gouan (figured at tab. 3193 as *A. alopecuroides*, L.), a native of the South of Europe. The plant figured, which was raised from seed sent by Mr. H. Whittall, of Smyrna, in 1895, flowered in the herbaceous grounds of the Royal Gardens in June of the present year.

Descr.—A perennial herb, with erect simple stems as thick as a swan's quill, glabrous throughout, or villous towards the upper part. *Leaves* alternate, rather distant, six inches to a foot long, spreading and recurved; rhachis slender, glabrous or pubescent, bearing leaflets nearly to the base; leaflets fifteen to twenty-five pairs, about an inch long, opposite and alternate, sessile or very shortly petiolulate, ovate-oblong, rounded at the base and tip, glabrous on both surfaces, or above only, and more or less softly hirsute beneath, rather thick, glaucous green, midrib slender, nerves very obscure; stipules up to an inch long, subulate-lanceolate. *Flowers* in dense globose or shortly ovoid axillary heads, one and a half to two inches in diameter, an inch long, very shortly pedicelled; bracts minute, subulate. *Calyx-tube* about one-third of an inch long, oblong, softly hirsute, green, teeth very short, ovate. *Corolla* primrose-yellow; standard oblong, recurved, shortly two-lobed; wing-petals rather shorter than the standard, claw nearly as long as the ovate-oblong obtuse limb, base with an incurved auricle; keel petals like the wings, but shorter and broader. *Ovary* hirsute. *Pod* very small, included in the calyx-tube, ovoid-oblong, beaked, hirsute, 2-celled; cells 1–2-seeded. *Seeds* sub-reniform, compressed.—*J. D. H.*

Fig. 1, Section of calyx with ovary; 2, wing-petal; 3, keel-petal; 4, stamens and ovary; 5, fruiting calyx; 6, seed:—*All enlarged.*

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Tab. 7623.

KNIPHOFIA longicollis.

Native of Natal.

Nat. Ord. Liliaceæ.—Tribe Hemerocalleæ.

(Genus Kniphofia, *Mœnch*, (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 775.)

Kniphofia *longicollis*; foliis multis linearibus acuminatis firmulis viridibus margine scabris dorso acute carinatis, pedunculo stricto erecto foliis breviore, racemo densissimo oblongo, pedicellis brevissimis cernuis, bracteis ovatis scariosis pedicellis longioribus, perianthio luteo elongato subcylindrico infra medium leviter constricto, lobis parvis ovatis, **staminibus styloque demum distincto exsertis.**

K. longicollis, *Hort. Leichtlin, ex Baker in Gard. Chron.* 1893, vol. xiii. p. 682, *et in Fl. Cap.* vol. vi. p. 284.

This new *Kniphofia* is nearly allied to the old well-known *K. aloides*, Mœnch (*K. Uvaria*, Hook. in Bot. Mag. tab. 4816), but is dwarfer in habit, with firmer, bright green leaves, and bright yellow flowers, without any tinge of red. It was imported from Natal by Herrn Max Leichtlin, and first flowered at Baden Baden in the summer of 1893. Our drawing was made from a plant flowered by W. E. Gumbleton, Esq., at Queenstown, County Cork, in February, 1897. We have not yet received any dried specimen, and do not know at what height above sea-level it grows in its native country. If it prove to be as hardy as *K. aloides*, it will be a valuable acquisition to our gardens.

Descr.—*Leaves* many in a tuft, linear, bright green, two or three feet long, tapering gradually to a long point, firm in texture, scabrous on the margin, acutely keeled on the back. *Peduncle* stiffly erect, shorter than the leaves. *Raceme* oblong, very dense, half a foot long; pedicels very short, cernuous, all the flowers bright, light yellow, tinged occasionally with orange, without any tinge of red; bracts ovate, scariose, longer than the pedicels. *Perianth* sub-

cylindrical, an inch and a quarter long, slightly constricted below the middle; lobes small, ovate. *Stamens* and *style* finally distinctly exserted; anthers small, oblong, light yellow.—*J. G. Baker.*

1, Margin of leaf; 2, flower; 3, front view of stamen; 4, back view of stamen; 5, style, ***all more or less enlarged.***

M.S.del, J.N.Fitch lith

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Tab. 7624.

ALOE leptophylla.

Native of Cape Colony.

Nat. Ord. Liliaceæ.—Tribe Aloineæ.

Genus Aloe, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 776.)

Aloe *leptophylla*; caudice simplici, foliis dense rosulatis recurvatis lanceolatis acuminatis pro genere tenuibus viridibus punctis et lineis albidis copiosis decoratis dentibus marginalibus crebris magnis deltoideis, pedunculo simplici stricto erecto foliis longiore, racemo congesto capitato, pedicellis longis, bracteis parvis lanceolato-deltoideis, perianthio aurantiaco tubo subcylindrico supra ovarium constricto, lobis linearibus tubo brevioribus apice viridibus, staminibus styloque breviter exsertis.

A. leptophylla, *N. E. Brown, ex Baker in Journ. Linn. Soc.* vol. xviii. p. 165; *Journ. Bot.* 1889, p. 44; *Fl. Cap.* vol. vi. p. 313.

This fine *Aloe* was collected by Mr. Thomas Cooper in his travels in South Africa, about the year 1860, in the province of Worcester, not far from the town of Worcester, which is about eight hundred feet above sea-level. It is nearly allied to *A. latifolia*, Haworth, but the leaves are thinner in texture than in any other species of the group *Maculatæ*, which is conspicuous for its copiously spotted leaves. The Kew plant, from which our drawing was made, was purchased from Mr. Cooper in 1897, and flowered in the Succulent House in April, 1898.

Descr.—*Stem* reaching a length of half a foot, and a diameter of two inches below the rosette of leaves. *Leaves* twelve to twenty in a rosette, recurved, lanceolate, acuminate, nine to twelve inches long, three or four inches broad, green, or tinged with purple, copiously spotted and striped with white, thinner in texture than in any of its allies; marginal teeth large, close, deltoid. *Peduncle* simple, stiffly erect, longer than the leaves. *Raceme* dense, capitate; pedicels an inch or more long; bracts small, lanceolate, deltoid. *Perianth* sub-cylindrical, an inch and a half long, bright orange-yellow, tipped with green; tube constricted above the ovary; lobes linear, shorter than the tube. *Stamens* and *style* slightly exerted.—*J. G. Baker.*

Fig. 1, A flower; 2, front view of stamen; 3, back view of stamen; 4, pistil. *all enlarged*; 5, whole plant, *much reduced*.

November 1st, 1898.

M.S. del J.N. Fitch lith.

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Tab. 7625.

PODOTHECA CHRYSANTHA.

Native of Western Australia.

Nat. Ord. Compositæ.—Tribe Inuloideæ.

Genus Podotheca, *Cass.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 315.)

Podotheca *chrysantha*; herba annua, 1–1½-pedalis, erecta, ramosa, glabra v. scaberula, laxe foliosa, foliis 1–3-pollicaribus basi latis sessilibus linearibus obtusis patenti-recurvis utrinque scaberulis, capitulis ad apices ramulorum solitariis, pedunculis apice incrassato intus vacuo, involucro late turbinato-campanulato ½–¾ poll. longo, bracteis erectis exterioribus herbaceis subæquilongis lanceolatis obtusis 3-nerviis laxe pilosis interioribus 2–3-seriatis linearibus lineari-spathulatisve hyalinis, receptaculo demum tumido tuberculato, floribus perplurimis omnibus hermaphroditis involucro longioribus, corollæ aureæ tubo pergracili elongato decurvo, lobis ovato-rotundatis, antherarum caudibus tenuissimis laceris, connectivo apice producto unguiformi, styli ramis elongatis gracilibus recurvis, stigmatibus capitellatis, pappi setis 8–10 filiformibus rigidis barbellatis, achenio angusto teretiusculo basi subulato hispido-pubescente.

P. chrysantha, *Benth. Flor. Austral.* vol. iii. p. 602.

Ixiolæna chrysantha, *Steetz, in Plant. Preiss.* vol. i. p. 459.

Podotheca is a small genus of six species, all confined to Western Australia. One only has been, previously to this date, figured from plants raised in this country, it is the *P. gnaphaloides*, Grah. (tab. 3920); a species remarkable for the great length of the involucre, the bracts of which are very unequal in length. *P. chrysantha* is a native of Western Australia, from the Swan to the Murchison Rivers. It differs from the generic character in the filiform pappus hairs, which are barbellate (not plumose), and in the achenes wanting a distinct stipes. The specimen figured was raised from seeds presented to the Royal Gardens in 1896 by Miss Bunbury, of Picton, W. Australia. It flowered in a cool house in May, 1897.

Descr.—An erect, annual, slender, branching herb, twelve to eighteen inches high, glabrous or scaberulous on the stem and leaves. *Leaves* scattered, sessile by a broad base, two to three inches long by about one-sixth of an inch broad, linear, obtuse, spreading, and recurved. *Heads* solitary, terminating the branches, one to one and a half inches

diam. across the flowers, peduncles slender, rather thickened, obconical and hollow at the top. *Involucre* two-thirds of an inch long, turbinately campanulate, bracts nearly equal in length, outer lanceolate, thinly herbaceous, green, sparsely villous with long hairs, inner scarious linear, or linear-spathulate, hyaline, glabrous, or sparingly ciliate. *Flowers* very many, much longer than the involucre, outer spreading all round, golden-yellow. *Corolla-tube* very slender, decurved, about half an inch long; lobes short, flat, broadly ovate, or nearly rounded. *Anthers* linear, cells with very delicate hair-like fimbriate tails; connective produced into a nail-shaped appendage. *Pappus hairs* about 20, equal in length, much shorter than the corolla-tube, rigid, filiform, barbellate. *Achene* small, terete, narrowly obconical, contracted below into a subulate base, densely hispid.—*J. D. H.*

Fig. 1, Outer; 2, inner involucral bracts; 3, flowers; 4, pappus hairs; 5, anthers; 6, style arms:—*All enlarged.*

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Tab. 7626.

CALLIANDRA FULGENS.

Native of Mexico.

Nat. Ord. Leguminosæ.—Tribe Ingeæ.

Genus Calliandra, *Benth.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 596.)

Calliandra (Unijugæ) *fulgens*; frutex v. arbuscula, foliis gracile petiolatis, petiolo glanduloso, pinnis unijugis, foliolis trijugis 2–2½ pollicaribus lineari-oblongis obtusis 3-nerviis et penninerviis basi cuneatis, junioribus pallide rufo-brunneis pilosulis, adultis viridibus glabris petiolo rhachique gracilibus puberulis, floribus in capitulum breviter pedunculatum globosum (staminibus inclusis) 2½ poll. diam. confertis, calyce minuto obconico ore truncato, corollæ $\frac{4}{10}$ poll. longæ roseæ lobis brevibus obtusis, staminum tubo breviter exserto membranaceo ore intus ad basin filamentorum squamulis crenulatis aucto, staminibus uniseriatis, filamentis 1¼ poll. longis strictis sanguineis, antheris minutis, disco tumido.

The nearest ally that I can find for this beautiful plant is *Calliandra hæmatocephala*, Hassk., figured at tab. 5181 of this work, which has a similar head of blood-red filaments, but which is perfectly glabrous, and has seven to ten pairs of much smaller dark green and shining leaflets rounded at the base. The native country of *C. hæmatocephala*, which was first known from being cultivated in the Botanical Gardens of Calcutta, has never been discovered. That of *C. fulgens* is believed to be Mexico, whence it was sent to the gardens of the Royal Botanic Society in Regent's Park. It flowered there in 1888, when a specimen was sent to Kew to be named, together with a living plant, which flowered in the Palm House in March, 1897, and continued in bloom till midsummer. I have repeatedly—but always in vain—attempted to identify it with any described species, or any plant preserved in the Herbarium at Kew, and must therefore regard it as an addition to the one hundred and thirteen recorded species of the genus.

Descr.—A low growing shrub or small tree, with spreading branches, covered with brown bark. *Leaves* solitary, or in pairs, each consisting of an eglandular petiole, bearing two pinnæ each, with three pairs of leaflets; petiole one and a half to two inches long, and rhachis of the pinnæ very slender, pubescent; leaflets

sessile, opposite, linear-oblong, obtuse, three-nerved from the base, with the midrib penninerved, quite glabrous, bright green above, pale beneath, base narrowed; young pinnæ pendulous, with pale, red-brown, membranous white leaflets, the terminal pair largest (all being subequal in age). *Flowers* capitate, on a very short peduncle, forming with the scarlet stamens a head two and a half inches in diameter. *Calyx* minute, truncate. *Corolla* four-tenths of an inch long, tubular-campanulate, shortly five-cleft, quite glabrous, bright pink, lobes short, rounded. *Staminal* tube exserted, mouth with one row of small crenate scales at the base of the single row of scarlet filaments which are an inch long; anthers minute, crimson. —*J. D. H.*

Fig. 1, Flower; 2, the same laid open, showing the interior of the staminal tube with the scales, bases of the stamens, disk and ovary:—*All enlarged.*

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Tab. 7627.

MUSA Bakeri.

Native of Cochin-China?

Nat. Ord. Scitamineæ.—Tribe Museæ.

Genus Musa, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 655.)

Musa (Eumusa) *Bakeri*; caule 10 pedali cylindrico basi stolonifero, foliis distincte petiolatis elongato-oblongis facie viridibus dorso pallidis basi inæqualibus leviter rotundatis vel subcuneatis, spicis brevibus cernuis, bracteis omnibus persistentibus vacuis lanceolatis floriferis inferioribus oblongis dorso rubro-brunneis intense glaucis intus sanguineis, floribus masculis unaquæque bractea 9–12, biseriatis, calycis dentibus brevibus obtusis apice cucullatis 2 exterioribus dorso cornutis cornu erecto 3 intermediis umbonatis centrali ceteris majore, petalo calyce dimidio breviore oblongo albo apice 3-lobo, lobo intermedio cuspidato, filamentis flavis rubro striatis recurvis staminodiis in fl. fem. cuspidatis, fructu immaturo acute trigono stigmate globoso.

M. Bakeri, *Hook. f. in Hort. Kew.*

The present plant flowered for the first time in the palm-stove of the Royal Gardens, Kew, in October, 1895. It was received from the Jardin des Plantes at Paris in 1890. There is some doubt as to its native country, which M. Cornu believes to be Cochin-China. It belongs to the group of *M. sapientum*, from which it differs mainly by its short spike and brightly coloured bracts, which resemble those of *M. rosacea*, Jacq., which forms a link of connection between the sections *Eumusa* and *Rhodochlamys*. *M. rosacea* is a much smaller, more slender plant, with narrower bracts, few flowers in a cluster, and a linear petal as long as the united sepals.

Descr.—*Stem* ten feet high, and eight to ten inches in diameter at the base, cylindrical, green, stoloniferous. *Leaves* distinctly petioled, elongate-oblong, seven feet long by two feet broad, bright green on the upper surface, pale green beneath, unequal, rounded or sub-cuneate at the base; petiole two feet long. *Spike* short, drooping; sterile bracts lanceolate; lower floriferous bracts oblong, half a foot long, reddish-brown, and intensely glaucous on the outside, bright crimson side. *Male flowers* nine to twelve in a cluster, distinctly biseriate; sepals united

except at the tip, an inch and a half long, teeth short, all cucullate at the tip, the two outer with an erect horn as long as the tooth, intermediate umbonate at the apex; petal whitish, oblong, three-lobed, cuspidate at the apex, half as long as the calyx. *Stamens* a little longer than the sepals. Unripe *fruit* oblong, acutely trigonous, green, narrowed gradually to the base, not distinctly stalked (in an early stage).—*J. G. Baker.*

Fig. 1, Lower floriferous bract, *life size*; 2, male flower, *life size*; 3, apex of united sepals, *enlarged*; 4, petal, *enlarged*; 5, stamen, *enlarged*; 6, female flower, *life size*; 7, unripe fruit, *life size*; 8, whole plant, *much reduced*.

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Tab. 7628.

CARDAMINE latifolia.

Native of the Pyrenees and S. Italy.

Nat. Ord. Cruciferæ.—Tribe Arabideæ.

Genus Cardamine, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 70.)

Cardamine *latifolia*; elata, robusta, glaberrima, rhizomate ramoso nodoso, foliis 6–10 poll. longis lyrato-pinnatisectis, segmentis deorsum accrescentibus repando-subcrenatis crassiusculis glaberrimis v. ciliatis, lateralibus paucis distantibus orbiculatis, terminali multo majore rotundato-reniform, superioribus trifoliolatis, inflorescentia erecta paniculata multiflora floribus ¾ poll. diam. ad apices ramorum subcorymbosis, pedicellis pollicaribus, sepalis oblongis glaberrimis, petalis roseo-lilacinis raro albis, antheris oblongis flavis, siliquis 1½ pollicaribus erectis strictis ⅕ poll. latis stylo brevi terminatis, stigmate obtuso, valvis enerviis, seminibus numerosis late oblongis fuscis, radicula obliqua accumbente.

C. latifolia, *Vahl, Symb.* vol. ii. p. 77. *DC. Fl. Franc.* Ed. 3, vol. iv. p. 683. *Loisel. Fl. Gall.* vol. ii. p. 84. *Duby, Bot. Gall.* p. 32. *Lapeyr. Hist. Abrégé Pl. Pyren.* p. 683. *Benth. Cat. Pl. Pyren.* p. 66. *Gren & Godr. Fl. Franc.* vol. i. p. 108. *Willk. & Lange, Prodr. Fl. Hisp.* vol. iii. p. 824. *Amo, Fl. Fanerog. Esp. et Port.* vol. vi. p. 551. *Groenl. in Rev. Hortic.* 1860, p. 460, figs. 93, 94.

C. Chelidonii, *Lam. Dict.* vol. ii. p. 183.

C. raphanifolia, *Pourr. in Mem. Acad. Toul.* vol. iii. (1788) p. 310.

C. pratensis, *Tenore, Viagg. in Abruz.* 1830, p. 77 (ex *Gay in Hb. Kew*).

C. pratensis, β. calabrica, *Tenore, Syll. Fl. Neap.* p. 319.

Cardamine latifolia resembles a gigantic form of the common Lady's Smock (*C. pratensis*). It is a native of the alpine valleys of the Pyrenees, growing by streams, and delighting in the spray of cataracts, as on the Prats de Mollo, Pas de Roland, Vallée de Viella, and the Republic of Andorre. It also occurs in a very remote locality from these, namely the mountains of Calabria in the South of Italy. It is well distinguished from *C. pratensis* by its great size, and the absence of pinnatifid upper leaves with narrow segments. The specimen here figured grows in the Rock Garden of the Royal Gardens, where it flowers annually in May.

Descr.—*Rootstock* branching, nodose. *Stem* twelve to eighteen inches high, stout, green, striate, paniculately branched above. *Leaves* rather fleshy, bright green, lower

six to ten inches long, lyrate-pinnatisect, petiole and rhachis stout, terminal segment orbicular, attaining three inches in diameter, obscurely crenate, lateral segments few, much smaller, alternate, distant, sessile, orbicular, lowest very small; upper leaves trifoliolate, all petiolulate, segments entire, or more or less unequally crenately lobulate, terminal largest. *Flowers* many, in erect, short racemes terminating the stem and branches, three-quarters of an inch in diameter, pedicels one half to one inch long, suberect. *Sepals* oblong, obtuse, glabrous. *Petals* with a short, broad, toothed claw, and an orbicular, rosy lilac, rarely white, orbicular limb one-third of an inch in diameter. *Pod* half an inch long, one-fifth of an inch broad, many-seeded; style short, stigma obtuse. *Seeds* pale brown—*J. D. H.*

Fig. 1, Claw of petal; 2, hypogynous glands, stamens and ovary; 3, ovary and glands; 4, pods; 5, seed; 6, embryo; 7, transverse section of seed:—*All enlarged*, except 4, which is of *nat. size.*

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Tab. 7629.

PAPHIOPEDILUM Mastersianum.

Native of Java.

Nat. Ord. Orchideæ.—Tribe Cypripedieæ.

Genus Paphiopedilum (*Pfitzer, Morphol. Stud. Orchid.* p. 11.)

Paphiopedilum *Mastersianum*; robustum, foliis late lineari-oblongis obtusis supra tessellatis subtus pallidis, scapo valido rufo-brunneo pilis patentibus purpureis hirsuto 1–2-floro, floribus magnis 4 poll. latis, perianthio crassiusculo, bracteis 1½ poll. longis cymbiformibus herbaceis, ovario fere tripollicari angulis hirsutis, sepalo dorsali erecto 2 poll. lato orbiculari ciliolato intus stramineo viridi striato nervis dorso hirsutis, lateralibus in laminam minorem viridem late ovatam obtusam labello breviorem confluentibus, petalis sepalis longioribus divaricatis lineari-oblongis apice rotundatis fusco-purpureis ciliatis basin versus verrucis purpureis ornatis, labello sacciformi fusco-purpureo versus orem subdilatatum amplum flavido, marginibus inflexis punctatis, staminodio parvo viridi ambitu orbiculari hippocrepiformi cuspidibus acutis.

C. Mastersianum, *Pfitz. in Engl. Bot. Jahrb.* vol. xix. (1895) p. 40.

Cypripedium Mastersianum, *Reichb. f. in Gard. Chron.* 1879, vol. ii. p. 102, *Masters, l. c.* 1894, vol. i. p. 593, t. 74. *Veitch, Man. Orchid.* part. iv. p. 39. *Lindenia,* vol. iv. t. 159. *Rolfe in Orchid. Rev.* vol. ii. p. 17, fig. 4.

A very robust and large-flowered species of the extensive genus *Paphiopedilum*, first described by Reichenbach in 1879, from a plant the native country of which was then doubtful, but which country Mr. Rolfe has ascertained to be Java, from a communication with Messrs. Low, who recently imported it from that island.

My reasons for adopting Pfitzer's generic name of *Paphiopedilum* are given under Tab. 7573. I think they are botanically unassailable, nevertheless I do not object to the substitution of *Cypripedium* for it, in common parlance, just as I do of *Aster chinensis* for the "China Aster," though that plant differs by important characters from all the species of that vast genus, and is known to botanists as *Callistephus hortensis*. The plant of *P. Mastersianum* here figured, which flowered in the Tropical Orchid House of the Royal Gardens, Kew, in March, 1898, was obtained from Messrs. F. Sander & Co. It is a noble species, named in compliment to Dr. Masters, F.R.S., through whose exertions, following those of his

predecessor, Dr. Lindley, the *Gardener's Chronicle* has done more to extend a knowledge of the *Orchideæ* than any other periodical.

Descr.—Tall, very robust. *Leaves* six to nine inches long, by one and a half broad, linear-oblong, obtuse, tessellate above with dark and very pale green, very pale beneath. *Scape* stout, a foot to a foot and a half high, very dark red purple, hirsute with dark, spreading hairs, one to two-fld. *Bracts* an inch and a half long, cymbiform, herbaceous, erect, dark green, dorsally hirsute on the keel and towards the base. *Flower* three inches across the petals, segments of perianth of a very thick texture. *Dorsal sepal* erect, orbicular, two inches broad, pale yellowish within, streaked with green from the base to three-fourths of its breadth, dorsally with hairy ribs. *Petals* spreading, linear-oblong, three-quarters of an inch broad, tip rounded, dull purplish brown, green, and marked with minute purple warts towards the base. *Lip* a large, inflated sac, of a dull red-purple colour, yellowish towards the somewhat dilated truncate mouth, inflected margins dotted. *Staminode* small, greenish, orbicular in outline, horse-shoe-shaped, with the incurved cusps acute, upper margin bifid. *Ovary* nearly three inches long, narrow, erect, ribs hispid with purple hairs.—*J. D. H.*

Fig. 1, Staminal column :—*Enlarged*.

M.S. del J.N. Fitch lith.

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Tab. 7630.

CALADENIA carnea.

var. *alba*.

Native of E. Australia and Tasmania.

Nat. Ord. Orchideæ.—Tribe Neottieæ.

Genus Caladenia, *R. Br.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 612.)

Caladenia (Eucaladenia) *carnea*; gracilis, sparse pilosa, tuberibus globosis, folio elongato anguste lineari, floribus 1–3, sepalis petalisque lateralibus consimilibus pollicaribus lanceolatis subacutis, sepalo dorsali erecto lineari-oblongo lateralibus deflexis paullo breviore, petalis deflexis, labello parvo sepalis vix dimidio breviore, lobis lateralibus latis apice rotundatis glabris, terminali parvo ovato obtuso recurvo callis clavellatis marginato, disco inter lobos laterales callis globosis sessilibus v. stipitatis bi-multiseriatis ornato, columna alata, anthera rostrata, polliniis late obcordatis bilamellosis.

C. carnea, *R. Br. Prodr.* p. 324. *Lindl. Gen. & Sp. Orchid.* p. 417. *Endl. Iconogr.* t. 57. *Hook. f. Fl. Tasman.* vol. ii. p. 29, t. 124 A. *Reichb. f. Beitr. Orch.* p. 28. *Benth. Fl. Austral.* vol. vi. p. 386. *Fitzgerald, Austral. Orchid.* vol. i. *Synops.* p. 1. *Ic. Caladen.* t. 4.

C. alata, *R. Br. l. c.* *Lindl. l. c.* 418. *Hook. f. l. c.* p. 30, t. 125 A. *Reichb. f. l. c.* 29.

C. angustata, *Hook. f. l. c.* t. 125 B.

?Arethusa catenata, *Sm. Exot. Bot.* vol. ii. p. 29, t. 104.

Var. alba; sepalo dorsali columnaque virescentibus, sepalis lateralibus petalisque albis roseo viridique irroratis. C. alba, *Br. l. c.* p. 323. *Fitzgerald, l. c.*

Caladenia carnea is a widely distributed species in Australia from Rockhampton, under the tropic of Capricorn, to the southern shores of Tasmania, and westward to St. Vincent Gulf in South Australia, varying a great deal in hairiness, and in the size and colour of the flowers, in the number of the calli on the disk of the lip, and in the breadth of the wings of the column. Bentham recognized three varieties; a typical one with pink sepals and petals, transverse bars of rose colour on the lip and column, and two rows of calli on the lip; a var. *alba*, with white flowers, and a var. *quadriseriata*, with pink flowers, and four rows of calli on the lip. In Tasmania, where I collected it in 1841, I recognized three forms, regarded by myself and by Mr. Archer, whose beautiful drawings are reproduced in the "Flora of Tasmania," as species,

which Bentham, rightly, I think, has reduced to *C. carnea*. These are *C. carnea*, R. Br., with pink sepals and petals, an erect dorsal sepal, and several rows of golden glands on the lip; *C. alata*, R. Br., taller, more robust, with nearly white sepals and petals, erect dorsal sepal, and four rows of pink calli on the lip; *C. angustata*, with rose-coloured flowers, an arched dorsal sepal, broader lateral sepals and petals, and four rows of calli on the lip. All these have transverse bars of pink at the base of the side-lobes of the lip, and on the column. The side-lobes are hardly produced into lobes in *alata* and *angustata*. I have cited Smith's *Arethusa catenata* as a doubtful synonym, because the lip is figured as blue. *C. carnea* is described by Mr. Fitzgerald as self-fertilizing. The Royal Gardens are indebted to Mr. J. O'Brien, of Harrow-on-the-Hill, for tubers of the white-flowered variety here figured, which flowered in a stove in February of the present year. The figure of the pink-flowered var. is taken from the "Flora Tasmaniæ."

Descr.—*Stem* six to twelve inches high, from nearly glabrous to more or less hairy and glandular. *Leaves* linear, variable in length. *Flowers* one to four, an inch to an inch and a half broad. *Sepals* and petals similar, white, pink, or greenish clouded with red, linear-lanceolate, sub-acute, all but the dorsal sepal more or less deflexed. *Lip* about half as long as the dorsal sepal, recurved beyond the middle, lateral lobes broad, obtuse, streaked with red, terminal small, ovate, with glandular margins, disk with two or more rows of stipitate capitate glands. *Column* winged.—*J. D. H.*

Fig. A, White-flowered var.; A 1, lip; A 2, column: A 3, pollinia:—*All enlarged*; B, pink-flowered var. (from "Flora Tasmaniæ," t. 124); B 1, roots, of *nat. size.*; B 2, lip, *enlarged.*

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Tab. 7631.

FRITILLARIA pluriflora.

Native of Northern California.

Nat. Ord. Liliaceæ.—Tribe Tulipeæ.

Genus Fritillaria, *Linn.* (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 817.)

Fritillaria (Theresia) *pluriflora*; bulbo magno squamis multis crassis oblongis, caule erecto elongato, foliis pluribus confertis ascendentibus lanceolatis vel linearibus inferioribus verticillatis vel oppositis superioribus alternis, racemo multifloro, pedicellis elongatis apice cernuis, bracteis magnis linearibus foliaceis, perianthio late aperto pallide rubro haud tessellato, segmentis oblongis obtusis foveolâ viridi carinata obscura præditis, staminibus perianthio distincte brevioribus, filamentis glabris, stylo apice tantum stigmatoso tricuspidato, capsulæ valvis dorso rotundatis.

F. pluriflora, *Torrey in Frem. Pl. Calif. Exsicc.* No. 213. *Benth. Pl. Hartweg.* p. 338 (name only). *Baker in Journ. Linn. Soc.* vol. xiv. p. 270. *S. Wats. in Proc. Amer. Acad.* vol. xiv. p. 259; *Bot. Calif.* vol. ii. p. 169.

This rare and little-known Californian Fritillary is very different from the ordinary European and Oriental species in its large bulb, widely-opened, untessellated, pale red flowers, numerous crowded leaves and style, three-cleft only at the very tip. Its nearest alliance is with *F. persica*, Linn. (Bot. Mag. t. 1537), but that has comparatively dull, bell-shaped flowers. It was first gathered by Fremont in 1846, on the banks of the Feather river, an affluent of the Sacramento, in the Sierra Nevada, Northern California; and two years later by Hartweg in the same locality. It has only lately been introduced into cultivation in England. Our drawing was made from plants that flowered at Kew in a cold frame last March and April, the bulbs of which were presented to the Royal Gardens in 1895 by Mr. Carl Purdy of Ukiah, California, who has made a speciality of the cultivation of Californian bulbs.

Descr.—*Bulb* large for the genus, globose, with many thick, oblong scales, an inch long. *Stem* terete, moderately stout, stiffly erect, a foot or more long. *Leaves* eight to fifteen, crowded, lanceolate or linear, ascending, the lower verticillate or opposite, the upper alternate. *Flowers* four to twelve in a lax raceme, pedicels long, cernuous at the

apex; bracts large, linear, foliaceous. *Perianth* about an inch long, pale red, opening widely when fully expanded; segments oblong, obtuse, with an obscure green, linear, nectary. *Stamens* shorter than the perianth; filaments glabrous, longer than the anthers. *Style* long, tricuspidate only at the tip. *Capsule* oblong, obtuse, deeply trisulcate; valves rounded on the back.—*J. G. Baker.*

Fig. 1, Front view of anther; 2, back view of anther; 3, pistil:—*All enlarged.*

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